Fishery Management Report No. 11-75

Kodiak Management Area Herring Fisheries Annual Management Report, 2010

by

Geoff Spalinger

December 2011

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

FISHERY MANAGEMENT REPORT NO. 11-75

KODIAK MANAGEMENT AREA HERRING FISHERIES ANNUAL MANAGEMENT REPORT, 2010

by
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The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone regional peer review.

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TABLE OF CONTENTS

Page

LIST OF TABLES ii

LIST OF FIGURES ii

LIST OF APPENDICES ii

ABSTRACT 1

INTRODUCTION 1

HERRING SAC ROE FISHERY 1

Fishery Characteristics 1

- Gear 2
- Fishing Periods 2
- Harvest Strategy 2

Fishery Management 2

- Establishing GHLs 2
- Inseason Fishery Management 3

2010 Season Summary 3

- Purse Seine Fishery 4
- Gillnet Fishery 4
- Inseason Gear Changes 4
- Exvessel Value of the Fishery 5

Stock Assessment 5

- Catch Sampling 6
- Stock Status by District 6

HERRING FOOD AND BAIT FISHERY 10

Fishery Characteristics 10

- Harvest Strategy 10
- Combine Fisheries 10
- Kamishak Stock 10

Kamishak Fishery Closure 11

2010/2011 Season 11

HERRING SUBSISTENCE FISHERY 11

Fishery Characteristics 11

2010 Season Summary 12

REFERENCES CITED 12

TABLES AND FIGURES 13

APPENDIX A. SUMMARY OF EMERGENCY ORDERS ISSUED FOR THE HERRING COMMERCIAL FISHERIES IN THE KODIAK MANAGEMENT AREA, 2010 33

LIST OF TABLES

Table **Page**

1. Annual harvests by weight and percent in the KMA commercial herring sac roe and food and bait fisheries, from 1964 through 2010. 14
2. Herring sac roe fishery guideline harvest level (GHL) by section and gear type, harvest by section and gear type, and date sections were closed, Kodiak Management Area, 2010. 15
3. Summary of season length, guideline harvest level (GHL), harvest by gear type, percentage of harvest by gear type, number of landings, and estimated exvessel earnings for the herring sac roe fishery in the KMA, from 1979 through 2010. 17
4. Age composition of herring samples from the commercial sac roe fishery, by section in the KMA, 2010. 18
5. Average weight of herring samples from the commercial sac roe fishery, by age and section in the KMA, 2010. 19
6. Herring food and bait commercial fishery GHLs and harvest (tons) by district, KMA, 2010. 20
7. Herring food and bait commercial fishery GHLs and harvest, KMA, 2001 through 2010. 20
8. Subsistence herring harvest summary for the KMA, 1991 through 2010. 21

LIST OF FIGURES

Figure **Page**

1. Map of southwestern Alaska showing the KMA and surrounding management areas. 22
2. Map of the KMA illustrating the herring commercial fishery districts. 23
3. Herring sac roe commercial fishery harvest in the KMA, 1964 through 2010. 24
4. Herring sac roe fishery harvest by day in the KMA, 2010. 25
5. Comparison of guideline harvest levels (GHLs) to the herring sac roe commercial harvest, KMA, 1979 through 2010. 26
6. Herring sac roe commercial fishery participation, by gear type in the KMA, 1979 through 2010. 27
7. Percent of the total harvest taken by gear type in herring sac roe commercial fishery, KMA, 1979 through 2010. 28
8. Herring sac roe fishery, roe recovery in the KMA, 1989 through 2010. 29
9. Average earnings by gear type for herring sac roe commercial fisheries, KMA, 1979 through 2010. 30
10. Total exvessel value for herring sac roe commercial fisheries, Kodiak Management Area, 1979 to 2010. 31

LIST OF APPENDICES

Appendix **Page**

A1. Summary of emergency orders issued for the herring commercial fisheries in the Kodiak Management Area, 2010. 34

ABSTRACT

This report presents information concerning the commercial Pacific herring *Clupea pallasii* sac roe, food and bait, and subsistence fisheries in the Kodiak Management Area (KMA) in 2010.

The KMA 2010 herring sac roe fishery was open from April 15 through June 30. Fishermen harvested 5,701 tons, compared to the preseason guideline harvest level (GHL) of 6,075 tons. Prior to May 1, the herring sac roe fishery is managed under an allocative harvest strategy that provides approximately 75% of the total Kodiak GHL to seine gear and approximately 25% to gillnet gear. From May 1 through June 30, the Alaska Department of Fish and Game (ADF&G) may open any area with a remaining GHL to any gear group if the fishery is unlikely to result in overharvest. Purse seine fishermen harvested 5,538 tons, approximately 97% of the total catch, and gillnet fishermen harvested 163 tons, approximately 3% of the total catch. Roe recovery percentages averaged 11.4% for the fishery. The total exvessel value of the fishery was an estimated $2,280,400. The harvest was composed primarily of 4.8% age-3, 2.7% age-4, 63.6% age-5, 14.6% age-6, 4.7% age-7, 2.9% age-8, 4.5% age-9, and 1.3% age-10.

A combine fishery was conducted for the KMA herring food and bait fishery for the 2001 to 2010 seasons due to the small GHLs. Food and bait harvests from the Uganik District in 2010 totaled 127 tons (159-ton GHL). Two trips were made to the South Afognak District harvesting 64 tons (60-ton GHL). The Eastside District (155-ton GHL), Alitak District (142-ton GHL), and Uyak District (39-ton GHL) could have been opened; however, no requests were made to ADF&G to open these districts.

Subsistence herring harvests were reported from a total of 26 subsistence permits. The total subsistence herring harvest for the KMA in 2010 was 2,773 pounds.

Key words: Kodiak, herring, *Clupea pallasii*, sac roe commercial fishery, food and bait commercial fishery, subsistence fishery, stock status, GHL, KMA, AMR.

INTRODUCTION

This report presents information on the commercial Pacific herring *Clupea pallasii* sac roe, food and bait, and subsistence fisheries in the Kodiak Management Area (KMA) in 2010. This includes harvest data by fishery, age and weight data collected from the commercial harvest, stock status, and a summary of fishery management activity.

The KMA comprises the waters of the Kodiak Archipelago and that portion of the Alaska Peninsula extending from Cape Douglas southwest to Kilokak Rocks (Figure 1). The archipelago is approximately 250 kilometers (150 miles) long, extending from Shuyak Island in the north to the Trinity Islands in the south. The Alaska Peninsula portion of the KMA is about 267 kilometers (160 miles) long and is separated from the archipelago by Shelikof Strait (Figure 1).

The KMA is divided into 13 districts that define geographical areas used to manage both herring sac roe and food and bait fisheries (Figure 2). For the sac roe fishery, each district is divided into sections that define the spawning area used by specific herring stocks or a geographical area.

HERRING SAC ROE FISHERY

FISHERY CHARACTERISTICS

The KMA herring sac roe fishery began in 1964 (Table 1; Figure 3) and occurs in approximately 30 bays and coastal locations. The fishery currently opens at noon on April 15, with most of the management area opening concurrently. This opening, prior to any major buildup of herring, was historically intended to distribute effort and harvest; however, in recent years, purse seine fishermen have concentrated in areas known to have early spawning herring and the largest guideline harvest levels (GHLs). The fishery ends on June 30 (5 AAC 27.510(a)).

Gear

Purse seines and gillnets are the only gear types allowed in the commercial sac roe fishery. Purse seines may not exceed 18 fathoms stretch measure in depth or 100 fathoms in length (5 AAC 27.525(a)). Gillnets may not exceed an aggregate length of 150 fathoms (5 AAC 27.520(a)).

Fishing Periods

From April 15 through May 7, fishing periods for purse seiners are from noon until 9:00 PM on odd-numbered days and from 9:00 AM to noon on even-numbered days. From May 8 through June 30, fishing periods for purse seiners are from noon until 10:00 PM on odd-numbered days and from 9:00 AM to noon on even-numbered days (5 AAC 27.510(a)(1)). For gillnets, fishing periods are from noon on odd-numbered days until noon on even-numbered days (5 AAC 27.510(a)(2)).

Harvest Strategy

The herring sac roe fishery is managed under an allocative harvest strategy that has been in effect since 2000 with some modifications in 2008 and 2009. The harvest strategy requires the Alaska Department of Fish and Game (ADF&G) to establish GHLs by section, based on historical harvest data, current and past fishery performance, age composition of commercial catch samples, aerial surveys, and hydroacoustic biomass assessments. For each district that has more than one section open to fishing, ADF&G is required to assign 20% to 30% of the GHL to gillnet permit holders and 70% to 80% of the GHL to purse seine permit holders (5 AAC 27.535(e)(2)(D)). This is accomplished by designating one gear type for each section with a GHL. In districts where assigning one gear type for each section would not achieve the required allocation, the department establishes GHLs for both gear types, within a section, and fishing is separated by time or area. Adjacent sections may be combined and managed as a single section if the same stock is present or moves between sections (5 AAC 27.535(e)(1)(A)). ADF&G may also use emergency order (EO) authority to restrict fishing time in any section if overharvest concerns exist or to open additional areas during the season.

Recent regulation changes made by the Alaska Board of Fisheries (BOF) allow ADF&G to open any area from May 1 through June 30, with a remaining GHL to any gear group if the fishery is not likely to result in overharvest (5 AAC 27.535(e)(1)(C)). Also, after April 30, permit holders must be registered with ADF&G before participating in the fishery (5 AAC 27.510(a)(4)).

FISHERY MANAGEMENT

Establishing GHLs

Preseason GHLs are established for all sections that have produced consistent herring harvests in previous seasons. These GHLs reflect the status of a particular herring stock by section. In 2010, section GHLs ranged from 10 to 1,500 tons (short; Table 2). Establishing the 2010 GHLs involved evaluation of a variety of information to determine stock status trends and conservative adjustment of GHLs, including

1. fishery performance during preceding season or seasons (i.e., harvest timing, harvest duration, average school size);

2. trends in age composition (i.e., level of recruitment of age-3 herring, the proportion of age-5 and younger herring, and the proportion of age-2 herring as an indicator of future recruit strength);
3. observations of spawn and juvenile herring;
4. industry and department aerial surveys;
5. hydroacoustic surveys; and
6. test fishery data including age composition and biomass estimates.

Preseason GHLs have generally reflected the actual harvests and have aided fishermen and processors in planning prior to the start of each season.

ADF&G has historically relied on the fishing industry to establish roe recovery and minimum size standards. The quality of Kodiak herring has generally been high, due to selective harvest of mature herring by fishermen and the inseason processing of relatively small amounts of herring over long time periods by local processors. In the 1990s, competition in the purse seine fishery intensified and fishermen were less selective in harvesting high-quality herring. In 2003 and 2004, ADF&G took a more active role in some sections to manage for roe quality, which resulted in delayed openings of sections and an increase in roe quality. During the 2005 BOF meeting, the harvest strategy was changed so that the department is directed to strive for the highest quality product (5 AAC 27.535(e)(6)).

Inseason Fishery Management

Inseason, processors and independent tender operators are required to provide daily tallies of herring tonnage and deliveries by section, as well as accurate estimates of herring tonnage onboard tenders that have not yet delivered to the processor. Reports from field personnel, processors, permit holders, spotter pilots, and tenders are tallied by ADF&G to assess herring harvests. Generally, once the harvest estimate approaches, meets, or exceeds the GHL, a section is closed for the season by EO. Due to the rapid pace at which some harvests occur, inperiod closures are frequent. In sections that have field personnel present on the grounds, inperiod closures may occur with only a few minutes of advance notice. Industry cooperation has greatly aided managers.

2010 SEASON SUMMARY

The 2010 sac roe season opened at noon April 15; however, fishermen were on strike and fishing didn't begin until April 20. The last harvest occurred on June 6 and 49 EOs were issued during the season (Figure 4; Appendix A1). The total 2010 KMA GHL was established at 6,075 tons and 5,701 tons were harvested (Table 3; Figure 5).

In 2010, 36 purse seine permit holders made 277 landings harvesting 5,538 tons (Table 3; Figure 6). A total of seven gillnet permit holders harvested 163 tons in 14 landings (Table 3; Figure 6). Purse seine fishermen harvested approximately 97% and gillnet fishermen harvested approximately 3% of the total KMA harvest in 2010 (Table 3; Figure 7). The 2010 average individual purse seine permit holder harvest was 154 tons, the highest average harvest for the years 1979 through 2010 (Table 3). The 2010 average individual gillnet permit holder harvest was 23 tons (Table 3). Five companies operated six shore-based processing facilities and one floating processor to buy and process herring.

ADF&G monitored the fishery with two shore-based field crews and three research vessels, all of which were stationed in anticipated herring harvest locations. Crews gathered effort and harvest data used to manage the fishery, and collected commercial catch samples to obtain age, weight, length (AWL), and maturity data.

There were a total of 52 sections open to fishing; however, 13 sections were exploratory that have little or no historic harvests. Harvests occurred within 32 sections and the remaining sections were either not fished or no harvest occurred. The combined Paramanof/Foul Bay sections was assigned a preseason GHL but never opened due to low herring abundance. Many of the sections that were not fished were within the Mainland Districts or gillnet only areas that never opened to purse seine gear.

Purse Seine Fishery

Purse seine harvests in 2010 occurred in nearly every section where purse seine permit holders were given the opportunity to harvest herring. The majority of the effort occurred in the Eastside District, the Afognak districts, and the combined Village Islands/Uganik Bay sections of the Uganik District. A total of 1,905 tons were harvested from twelve sections in the Eastside District (Table 2). Three of these sections were exploratory and four were originally assigned to gillnet gear. Purse seiners harvested 531 tons from three sections in the Afognak districts. The combined Village Islands/Uganik Bay sections had 1,599 tons taken by purse seiners. While effort was concentrated in these areas, harvests occurred throughout the KMA. In the Uyak District permit holders harvested 319 tons from the Inner Uyak Bay Section. From the Alitak District, 814 tons were taken from six sections. The Kizhuyak Bay Section of the Inner Marmot District had 180 tons harvested by purse seine gear. Purse seiners also harvested 105 tons from the Womens Bay Section of the Northeast District (Table 2). Roe recovery from purse seine harvests averaged 11.4 % (Figure 8).

Gillnet Fishery

Gillnet effort was expected to be minimal in 2010. As a result, ADF&G opened areas initially allocated to the gillnet fleet by EO to continuous fishing beginning at noon on April 15 (Appendix A1). Normally gillnet areas follow a fishing schedule that allows them to fish from noon on even-numbered days until noon on odd-numbered days (24-hour open periods followed by 24-hour closed periods).

Gillnet permit holders harvested 120 tons from the 200-ton gillnet GHL in the Danger Bay Section. Other sections with harvest from the gillnet fleet included Browns Lagoon (41 tons), and the combined Village Islands/Uganik Bay sections (3 tons; Table 2). Roe recovery from gillnet harvests averaged 10.9% (Figure 8).

Inseason Gear Changes

Based on BOF changes to the regulations enacted in February, 2009, ADF&G has the authority to allow any gear group access to a section with a remaining GHL after April 30, if the fishery is unlikely to result in overharvest (5 AAC 27.535(e)(1)(C)). Beginning noon May 1, the following sections were opened to both gear types: the Inner Alitak Bay, Inner/Outer Deadman bays, East Upper Olga Bay, West Upper Olga Bay, Sulua Bay, Lower Olga Bay, and Inner Ugak Bay sections. The following sections opened to both gear types at some time after May when ADF&G had the necessary coverage to monitor the fisheries: the Tonki Bay, West Sitkalidak, Three Saints Bay, Inner Kiliuda, Shearwater Bay, Terror Bay, West Uganik Passage, and

Womens Bay sections (Appendix A1). Due to little to no gillnet effort, in fisheries where both gear types were allowed to fish simultaneously, there were no reports of gear conflicts.

Exvessel Value of the Fishery

In 2010, the exvessel price paid for 10% roe recovery herring was approximately $400 per ton at the dock, below the $525 that was paid in 2009 and 2008 (Table 3). The estimated average exvessel earnings per purse seine permit holder was $61,533 and $9,314 for gillnet permit holders (Figure 9). The total exvessel value of the 2010 fishery was an estimated $2,280,400 (Table 3; Figure 10), which does not include any adjustments in value for roe recovery above or below 10% recovery, herring that are sold as bait, or herring that were discarded. Roe recovery from the 2010 fishery averaged 11.4% (Figure 8).

STOCK ASSESSMENT

ADF&G evaluates fishery performance and survey information to assess trends in stock status. Hydroacoustic and aerial surveys are conducted by ADF&G to assess herring abundance prior to, during, and after the commercial fishery and to survey closed sections. Herring samples come from commercial harvests and from research vessels (using trawl gear). Age composition information from these samples provide insight into recruitment and aid managers in making GHL adjustments. For example, areas with strong percentages of age-4 and younger herring (recruitment) will not be aggressively fished and will have conservative GHLs, whereas areas with older age classes (9 or more years old) will be more aggressively fished with increased GHLs.

Industry aerial observers and permit holders have aided managers by providing biomass estimates, spawn observations, fleet movements, and harvest estimates. Although aerial and hydroacoustic assessments provide an evaluation of the biomass, there are problems associated with herring assessment in the KMA. These problems include the following:

1. Herring tend to be deeper during the day and rise toward the surface during the evening and early morning hours, limiting the time fish are observable from the air.
2. Most fishing sections have several distinct schools of herring that spawn from April through June, making complete biomass estimates difficult.
3. Herring may stay within an area for the duration of the sac roe season or may move to another district, which may lead to duplicated or incomplete biomass estimates, or incorrect assignment to a spawning stock location.
4. The KMA encompasses a large geographical area.
5. Adverse weather conditions limit the extent of surveys.
6. Hydroacoustic surveys are limited in shallower waters, and vessel avoidance by herring is known to occur (Hjellvik et al. 2008).
7. A substantial amount of subtidal spawning may occur in water 10 to 20 fathoms in depth, which is not detectable from aerial surveys.

Fishery performance is used to evaluate stock status; however, due to the low gillnet effort since 1998, fishery performance is not a good indicator of stock status within gillnet sections. Regulation changes in 2009 allowing both gear types to fish in the same sections after April 30

(5 AAC 27.535(e)(1)(C)) has allowed ADF&G to gain information from gillnet sections that have not been fished in recent years. In 2010, commercial catch samples were collected from many sections initially allocated to the gillnet fleet. Participation in most purse seine sections has been consistent, and commercial catches have been sampled regularly.

Catch Sampling

A total of 8,458 herring were collected and analyzed for AWL data from harvests and ADF&G trawl samples during the 2010 sac roe season. Samples were taken from 21 sections, 20 of which had commercial harvests. Age-5 herring were the dominant age class harvested in 2010, representing approximately 64% of the total commercial harvest (Table 4). The complete commercial harvest consisted of 4.8% age-3, 2.7% age-4, 63.6% age-5, 14.6% age-6, 4.7% age-7, 2.9% age-8, 4.5% age-9, 1.3% age-10, 0.4% age-11, and 0.3% age-12 herring (Table 4). Herring weights in 2010 were more consistent between areas throughout the Kodiak Archipelago than in previous years (Table 5).

Stock Status by District

Herring can generally be found seasonally in all bays of the KMA (Figure 2). ADF&G monitors approximately 70 sections that are known to have spawning populations of herring, with the majority of effort spent on larger herring stocks. Generally, there is less information available for the smaller stocks of herring so the evaluation of these stocks is more tenuous. In some areas, such as in the Mainland districts, several years may elapse before new information becomes available. ADF&G also considers information provided by commercial herring fishermen, spotter pilots, air taxi operators, and remote area residents concerning herring distribution, biomass estimates, and spawn sightings.

North Afognak District

Five sections compose the North Afognak District. Spawning stocks of herring occur in all five sections, although these stocks tend to be small (less than 20 tons; Figure 2). The Tonki Bay Section currently has the largest biomass, and had a GHL of 40 tons in 2010. Purse seine fishermen harvested 33 tons (Table 2). An aerial survey observed 25 tons in Tonki Bay. The Perenosa Bay Section was open to gillnet gear in 2010 with a 10-ton GHL and no harvest occurred (Table 2). The Delphin Bay Section was open as exploratory but no harvest occurred.

West Afognak District

The West Afognak District has six sections, five of which are known to have spawning stocks of herring (Figure 2). Paramanof Bay has the largest spawning stock within this district; however, this stock has been at low levels since 2005. This stock had been rebuilding, and in 2010 ADF&G established a preseason GHL of 200 tons (Table 2). However, ADF&G conducted hydroacoustic surveys and only estimated approximately 700 tons. The Paramanof Bay Section remained closed in 2010.

South Afognak District

The South Afognak District comprises six sections and the Danger Bay Section currently has the largest stock of herring in this district (Figure 2). This section opened with a 500-ton GHL for both purse seine (300-ton GHL) and gillnet (200-ton GHL) permit holders (Table 2). Purse seine fishermen harvested 388 tons and gillnet fishermen harvested 120 tons (Table 2). A cost recovery harvest also occurred and an additional 117 tons were taken to help offset ADF&G

operational costs. Commercial catch samples consisted of 1.0% age-3, 2.4% age-4, 66.7% age-5, 20.5 % age-6, 6.2% age-7, 1.0% age-8, and 1.5% age-9 (Table 4). Hydroacoustic surveys conducted by ADF&G observed 5,400 tons of herring prior to the fishery.

In 2010, the MacDonalds Lagoon, Kitoi Bay, and Izhut Bay sections were combined and managed as one unit allocated to purse seine gear with a 100-ton GHL (Table 2). Purse seine permit holders harvested 110 tons. Commercial catch samples consisted of 6.9% age 3, 4.5% age-4, 59.8% age-5, 16.3% age-6, 5.0% age-7, 4.0% age-8, 3.1% age-9, 0.2% age-11, and 0.2% age-13 herring (Table 4).

Uganik District

The Uganik District consists of nine sections on the northwest side of Kodiak Island (Figure 2). During the last 10 years this district has provided the greatest harvest opportunity in the KMA. Hydroacoustic and aerial survey information indicate that the Village Islands spawning biomass is currently the largest in the KMA. The total biomass of herring observed in the Village Islands/Uganik Bay sections has been estimated from 10,000 to 30,000 tons (herring congregate in Uganik Bay throughout the year, complicating biomass estimation). The 2010 GHL for this section was 1,500 tons (1,200 purse seine and 300 gillnet; Table 2). Purse seine fishermen harvested 1,599 tons and gillnet fishermen harvested 3 tons (Table 2). Catch samples were composed mainly of 4.3% age-3, 5.3% age-4, 50.6% age-5, 22.3% age-6, 7.9% age-7, 3.0% age-8, 1.8% age-9, 3.0% age-10, and 1.0% age-11 herring (Table 4). The West Uganik Passage had a 40-ton GHL and 84 tons were harvested (Table 2).

Uyak District

The Uyak District is made of seven sections located on the west side of Kodiak Island (Figure 2). Through the 1980s, the Uyak District was the largest herring producing district in the KMA. In the early 1990s these stocks began declining and were at low levels for several years. In 2002, aerial surveys indicated that these stocks were improving, and by 2004 several sections were reopened for the first time since 1994. In 2010, the Inner Uyak Bay Section was combined with the Zachar Bay Section and managed as one section. Herring are known to move between these two sections. The GHL for the Inner Uyak Bay/Zachar Bay sections was established at 300 tons and 319 tons were harvested (Table 2). Herring collected from the fishery consisted mainly of 5.4% age-3, 2.8% age-4, 68.5% age-5, 16.2% age-6, and 5.6% age-7 herring (Table 4).

The Brown's Lagoon Section was open to gillnet gear in 2010 with an 80-ton GHL (Table 2). Gillnet fishermen harvested 41 tons (Table 2). Herring are known to stage in this section, then move into the Inner Uyak Section. Between 1,500 to 2,000 tons were observed in Brown's Lagoon in 2010.

Alitak District

All sections in the Alitak District (Figure 2), except the Outer Alitak Section, are known to have herring stocks. Herring stocks began to decline in the early 1990s, and by 1998 most sections were closed. In 2002, aerial survey reports indicated an increase in herring abundance. In 2003 and 2004, some sections were opened to gillnet gear to act as test fisheries. By 2005, several sections that had been closed were reopened. In 2010, the combined GHL for sections in the Alitak District was one of the largest in the KMA.

In 2010, The Inner and Outer Deadman Bay sections were combined to be managed as one section. These combined sections had a GHL of 800 tons and purse seine fishermen harvested

581 tons (Table 2). The harvest was composed mostly of 16.2% age-3, 2.1% age-4, 51.0% age-5, 14.0% age-6, 4.2% age-7, 5.4% age-8, and 6.4% age-9 herring (Table 4).

The Sulua Bay Section was open in 2010 with a 100-ton GHL and 103 tons were harvested (Table 2). The East Upper Olga Bay Section was open in 2010 with a 125-ton GHL and 24 tons were harvested by purse seine gear (Table 2). The West Upper Olga Bay Section was open in 2010 with a 125-ton GHL, and 86 tons were harvested by purse seine gear (Table 2). The Lower Olga Bay Section had a 75-ton GHL in 2010 and just 3 tons were harvested (Table 2).

The Geese/Two Headed Section was open as an exploratory section in 2010 and a harvest occurred for the first time since 1999. Purse seine fishermen harvested 19 tons (Table 2) and catch samples from the harvest consisted of 68.1% age-5, 20.8% age-6, 2.8% age-7, 1.4% age-8, 4.2% age-9, and 2.8% age-11 (Table 4).

Eastside District

The Eastside District is composed of four bay complexes: Ugak Bay, Kiliuda Bay, East Sitkalidak Strait, and West Sitkalidak Strait (Figure 2). Sixteen sections have been established and only one, the Outer Sitkalidak Section, has no history of herring sac roe harvests. Hydroacoustic surveys in this district are conducted less frequently than other portions of the KMA.

Generally, the East and West Sitkalidak sections have the earliest spawning herring in the KMA, with initial spawns sometimes occurring as early as late March. In 2010, the GHL for the East Sitkalidak Section was established at 300 tons, and 284 tons were harvested by purse seine gear (Table 2). Age composition of the harvest was composed mainly of 69.4% age-5, 12.5% age-6, 1.7% age-7, 3.3% age-8, 11.1% age-9, and 1.0% age-10 herring (Table 4).

The West Sitkalidak Section GHL was established at 300 tons in 2010 and 346 tons were harvested (Table 2). The fishery consisted mainly of 1.1% age-3, 70.9% age-5, 9.7% age-6, 4.2% age-8, and 11.5% age-9 herring (Table 4).

The Barling Bay Section, adjacent to the West Sitkalidak Section, has been the most consistent herring producer in the Eastside District. The section had a 150 ton GHL in 2010 and 165 tons were harvested (Table 2). Commercial catch samples of the harvest were composed mostly of 3.2% age-3, 73.7% age-5, 8.3% age-6, 1.2% age-7, 1.8% age-8, 10.0% age-9, and 1.2% age-10 herring (Table 4).

The GHL for the Outer Kiliuda Bay Section was set at 100 tons, and 127 tons were harvested by purse seine fishermen in 2010 (Table 2). Age compositions of the harvest were 7.7% age-3, 2.4% age-4, 62.7% age-5, 5.9% age-6, 1.8% age-7, 3.6% age-8, and 16.0% age-8 (Table 4).

The Inner Kiliuda Bay Section was initially established as a gillnet section with a 50-ton GHL in 2010 (Table 2). In May, this section was also opened to the purse seine fleet as well. Purse seine fishermen harvested 39 tons (Table 2). Commercial catch samples were composed primarily of 12.5% age-3, 1.0% age-4, 63.1% age-5, 5.1% age-6, 1.8% age-7, 4.6% age-8, and 11.5% age-9 herring (Table 4).

The Inner and Outer Ugak Bay sections have been strong herring producers in the past. The 2010 GHL for the Outer Ugak Bay Section was 350 tons and allocated to purse seiners, 521 tons were harvested (Table 2). Samples from the harvest consisted mostly of 4.0% age-3, 90.5% age-5, and 3.2% age-6 herring (Table 4).

The Inner Ugak Bay Section was initially allocated to the gillnet fleet and opened to the purse seine fleet after April 30. The GHL was established at 200 tons and purse seine fishermen harvested 277 tons (Table 2). Samples from the commercial harvest were composed primarily of 2.3% age-3, 83.4% age-5, 3.4% age-6, 1.4% age-7, 3.2% age-8, 2.7% age-9, and 1.8% age-10 herring (Table 4).

The Shearwater Bay Section was initially allocated to the gillnet fleet with a 50-ton GHL (Table 2). After April 30, this section was opened to purse seiner gear and the purse seine fleet harvested 39 tons (Table 2). Age compositions from the harvest consisted primarily of 1.3% age-3, 81.0% age-5, 4.4% age-6, 1.5% age-8, and 9.6% age-9 herring (Table 4).

The Three Saints Bay Section had a set GHL in 2010 for the first time since 2004. A purse seine GHL was set at 50 tons and 52 tons were harvested (Table 2).

There were harvests in three exploratory areas of the Eastside District in 2010 by purse seiners. The Tanginak Anchorage Section had a harvest of 28 tons, the Newman Bay Section had 11 tons harvested and 16 tons were taken from the Southwest Sitkalidak Section. Herring harvested from the Tanginak Anchorage Section were composed of 69.1% age-5, 9.9% age-6, 3.7% age-7, 5.6% age- 8, and 11.1% age-9 (Table 4). The Newman Bay harvest was composed of 47.6% age-5, 9.6% age-6, 3.2% age-7, 4.8% age-8, 33.3% age-9, and 1.6% age-10 (Table 4). Age compositions from the Southwest Sitkalidak Section consisted of 1.2% age-4, 62.4% age-5, 5.8% age-6, 1.7% age-7, 5.2% age-8, and 22.0% age-9 herring (Table 4).

Northeast District

The Northeast District is composed of five sections, four of which have known spawning stocks of herring (Figure 2). The Womens Bay Section currently has the largest stock of herring in this district. This section was initially opened to the gillnet fleet only with a 50-ton GHL (Table 2). On May 13, this section opened to purse seiners and they harvested 105 tons (Table 2). Samples from the harvest consisted of 3.8% age-3, 59.0% age-5, 5.5% age-6, 11.1% age-7, 7.0% age-8, and 12.6% age-8 herring (Table 4).

Inner Marmot District

There are five sections within the Inner Marmot District. All have known spawning stocks of herring, although most stocks are small (Figure 2). The Kizhuyak Bay Section has the largest stock of herring in the district. In 2010, this section was opened to purse seine gear with a 150-ton GHL and 180 tons were harvested (Table 2). Samples from the harvest were composed of 2.9% age-3, 5.8% age-4, 72.7% age-5, 5.8% age-6, 2.9% age-7, 4.3% age-8, and 4.3% age-9 herring (Table 4).

Mainland District

There are three Mainland districts comprising 12 sections (Figure 2). The last commercial herring harvest from the Mainland districts occurred in 1997. Seven sections were open as exploratory in 2010; however, no effort occurred. The Inner Kukak Bay Section currently has the largest known biomass in the Mainland districts. Over 15,000 tons were estimated in this section based on hydroacoustic surveys in 2010. Samples from this biomass were composed of 1.3% age-2, 67.9% age-3, 13.2% age-4, 9.8% age-5, 6.2% age-6, and 1.5% age-7 herring (Table 4).

HERRING FOOD AND BAIT FISHERY

FISHERY CHARACTERISTICS

Harvest Strategy

The herring food and bait season currently opens September 1 and lasts until February 28 (5 AAC 27.510(b)). GHLs for the fishery are established by district and are based upon 10% of the GHLs established for the preceding sac roe fishery by section (5 AAC 27.535(b)).

Combine Fisheries

The KMA herring food and bait fishery was closed for the 1999 and 2000 seasons because of low potential GHLs and ADF&G's concern for manageability of a competitive fishery on a highly aggregated stock. In 2001, the Commercial Fisheries Entry Commission (CFEC) designated the KMA herring food and bait fishery a limited entry fishery and issued 13 interim use permits to those fishermen who made landings between 1994 and 1998 (Gretsch 2001). Because of the relatively low GHLs available (60 tons in the Uganik District and 47 tons in the Eastside District), ADF&G did not allow a competitive fishery in 2001. As an alternative, the interim permit holders formed a combine, and ADF&G and CFEC agreed to allow a combine fishery to occur. The 13 interim permit holders determined which vessel would conduct the harvest, all marketing aspects, and all costs associated with harvesting and tendering the herring. In July 2002, the CFEC made a final determination on these limited entry permits. Nine permanent limited entry permits were issued, consisting of five purse seine/gillnet permits and four trawl permits.

Combine fisheries have been conducted under similar conditions each season from 2002 through 2010. Generally, one purse seine vessel is used to harvest herring that are then loaded onto a tender for transport. Fishing efforts have been focused mainly in the Uganik District, the area with the largest GHL. Areas with smaller GHLs, such as the Eastside, Alitak, and Uyak districts, have generally seen less effort. Trawl permit holders have not participated in the harvesting for the combine fishery.

Kamishak Stock

During the fall and winter months of the early 1980s, large concentrations of herring were observed in eastern Shelikof Strait and adjacent bays along the west side of the Kodiak Archipelago. The biomass exceeded that of known KMA spawning stocks. Herring food and bait fishermen targeted these herring, but the stock composition was unknown. In 1986, a stock identification study, based on scale pattern analysis, was conducted on herring harvested from a large biomass located in the northeastern part of the Shelikof Strait (Johnson et al., Unpublished, Stock Identification of Pacific Herring in the Bait Fishery in Shelikof Strait, Alaska, 1985/86, available through Geoff Spalinger, ADF&G fishery management biologist, Kodiak, Alaska). Results of the study indicated that at least 80% of the Shelikof herring catch sampled were Kamishak Bay stocks, which spawn within the Lower Cook Inlet (LCI) Management Area. The current harvest strategy alleviates the problem of identifying the spawning stock of a harvest in areas where intermixing may occur by closing the food and bait fishery north of the latitude of Miners Point (Uganik Bay) when the Kamishak spawning biomass falls below 6,000 tons (5 AAC 27.535(d)).

KAMISHAK FISHERY CLOSURE

The 2011 biomass forecast for Kamishak Bay herring affects the 2010/2011 Kodiak food and bait fishery in the Shelikof Strait. The biomass forecast for Kamishak Bay herring for the 2011 season was estimated at 2,557 tons, well below the minimum spawning biomass of 6,000 tons that must be met before commercial fisheries may occur ((5 AAC 27.465(e)(4)); Ted Otis, Lower Cook Inlet Finfish Research Biologist, ADF&G, Homer, Alaska, Personal Communication). This was the twelfth consecutive year that the Kamishak Bay District sac roe fishery has been closed. Due to the 2011 Kamishak Bay sac roe fishery closure, the Shelikof Strait food and bait fishery north of the latitude of Miner's Point was closed for the 2010/2011 season.

2010/2011 SEASON

Permit holders again requested a combine fishery for the 2010/2011 season, although there was some discussion of having a competitive fishery. The biggest obstacle to a competitive fishery is how to determine an equitable fishing period for the two gear types. ADF&G accommodated the permit holders' request, and the South Afognak District opened on September 19 with a 60-ton GHL (Table 6). Approximately 28 tons were harvested on September 21, and 36 tons on October 25. The South Afognak District was closed on October 26 with a total harvest of 64 tons (Table 6). That portion of the Uganik District south of the latitude of Miners Point was opened on October 26. The first harvest occurred on November 23 when approximately 9 tons were harvested. The next harvest occurred on December 14 when 118 tons were taken for a district total of 127 tons (Table 6). These harvests from the South Afognak and Uganik districts totaled 191 tons and fulfilled market demand in Kodiak. There were no other requests to open other areas (Tables 6 and 7). The Eastside District (155-ton GHL), Alitak District (142-ton GHL), and Uyak District (39-ton GHL) could have been opened had there been interest in fishing these areas.

Commercial catch samples from the South Afognak District were composed of 7% age-4, 33% age-5, 40% age-6, 15% age-7, 3% age-8, and 2% age-9 herring. Samples from the Uganik District were composed of 6% age-2, 10% age-3, 33% age-4, 30% age-5, 12% age-6, 7% age-7, and 2% age-10 herring.

HERRING SUBSISTENCE FISHERY

FISHERY CHARACTERISTICS

Prior to 1999, the herring subsistence fishery was referred to as a Personal Use/Subsistence Fishery and had occurred for at least twenty years. The majority of the harvest occurred near the Port of Kodiak in Womens Bay and was caught by gillnets. The herring were used primarily for bait in commercial longline and pot fisheries. Also, prior to 1999, this fishery was only regulated during the herring sac roe season, from April 15 to June 30, under the conditions of the subsistence permit issued in Kodiak. Gear was limited to a 25-fathom gillnet but there was no harvest limit. The remainder of the year there were no permit requirements, gear restrictions, or harvest limits.

In 1999, more restrictive regulations were approved by the BOF. These regulations allowed for a harvest of up to 500 pounds of herring with no permit requirements, except during the sac roe fishing season (April 15 to June 30; Gretsch 2001). A subsistence permit was required for those individuals that wished to fish during the sac roe season or intended to harvest more than 500

pounds of herring annually. The maximum annual harvest was limited to 2,000 pounds per permit.

In 2000, herring subsistence harvests escalated due to bait needs created with the reopening of the commercial tanner crab fishery in the KMA. The department was concerned about the increased herring subsistence harvest and the appropriateness of taking subsistence herring for use as bait in a commercial fishery. ADF&G proposed regulation changes to the BOF in 2001, which were approved to allow for both types of historic harvests. The current subsistence regulation allows for the harvest of up to a total of 500 pounds of herring annually and requires that fishermen obtain a permit prior to fishing (5 AAC 01.530. (d)). Herring were included on the existing KMA salmon and crab subsistence permit. Another permit was also created which allows for the harvest of up to 500 pounds of herring by commercial permit holders to be used as bait in commercial fisheries (5 AAC 27.545).

2010 SEASON SUMMARY

A total of 26 KMA subsistence permits were returned to ADF&G, as required for reporting purposes, with herring subsistence harvest data. The reported subsistence herring harvests totaled 2,773 pounds (Table 8). The majority of the harvest occurred in the Inner Marmot, Eastside, Northeast, and Afognak districts.

REFERENCES CITED

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Hjellvik V., N. O. Handegard, and E. Ona. 2008. Correcting for vessel avoidance in acoustic-abundance estimates for herring. ICES Journal of Marine Science, 65; 1036-1045.

TABLES AND FIGURES

Table 1.–Annual harvests by weight and percent in the KMA commercial herring sac roe and food and bait fisheries, from 1964 through 2010.

Year	Sac Roe Harvest (Tons)	Food/Bait Harvest (Tons)	Total Herring Harvest (Tons)	Sac Roe Fishery Percent of Total Harvest (%)	Food/Bait Fishery Percent of Total Harvest (%)
1964	568	310	878	65%	35%
1965	657	35	692	95%	5%
1966	2,769	198	2,967	93%	7%
1967	1,662	300	1,962	85%	15%
1968	2,001	15	2,016	99%	1%
1969	1,130	11	1,141	99%	1%
1970	342	8	350	98%	2%
1971	284	44	328	87%	13%
1972	215	50	265	81%	19%
1973	831	178	1,009	82%	18%
1974	868	40	908	96%	4%
1975	8	5	13	62%	38%
1976	5	0	5	100%	0%
1977	338	0	338	100%	0%
1978	904	399	1,303	69%	31%
1979	1,735	125	1,860	93%	7%
1980	2,383	381	2,764	86%	14%
1981	2,065	18	2,083	99%	1%
1982	1,771	326	2,097	84%	16%
1983	2,318	33	2,351	99%	1%
1984	2,163	123	2,286	95%	5%
1985	1,968	102	2,070	95%	5%
1986	1,558	213	1,771	88%	12%
1987	2,146	217	2,363	91%	9%
1988	2,171	340	2,511	86%	14%
1989	2,249	345	2,594	87%	13%
1990	2,347	313	2,660	88%	12%
1991	2,432	215	2,647	92%	8%
1992	4,283	312	4,595	93%	7%
1993	4,929	837	5,766	85%	15%
1994	5,893	677	6,570	90%	10%
1995	4,604	507	5,111	90%	10%
1996	3,386	651	4,037	84%	16%
1997	3,235	756	3,991	81%	19%
1998	2,057	151	2,208	93%	7%
1999	1,651	0	1,651	100%	0%
2000	1,370	0	1,370	100%	0%
2001	1,694	115	1,809	94%	6%
2002	1,677	135	1,812	93%	7%
2003	1,992	199	2,191	91%	9%
2004	3,167	190	3,357	94%	6%
2005	3,463	168	3,631	95%	5%
2006	2,643	169	2,812	94%	6%
2007	2,546	154	2,700	94%	6%
2008	3,099	202	3,301	94%	6%
2009	4,759	263	5,022	95%	5%
2010	5,701	191	5,892	97%	3%
Average 1964 to 2010	2,171	213	2,384	90%	10%
10 Year Average 2001 to 2010	3,074	179	3,253	94%	6%
5 Year Average 2006 to 2010	3,750	196	3,945	95%	5%

Table 2.–Herring sac roe fishery guideline harvest level (GHL) by section and gear type, harvest by section and gear type, and date sections were closed, Kodiak Management Area, 2010.

Statistical Area	Management Section	GHL	Initial Gear Type [a]	Harvest		Date Closed	
				Purse Seine	Gillnet	Purse Seine	Gillnet
NORTH AFOGNAK DISTRICT							
NA10	Shuyak Island	CLOSED	-	-	-	-	-
NA20	Delphin Bay	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
NA30	Perenosa Bay	10	Gillnet	-	0	-	6/30/2010
NA40	Seal Bay	CLOSED	-	-	-	-	-
NA50	Tonki Bay	40	Purse Seine	33	-	5/5/2010	5/5/2010
WEST AFOGNAK DISTRICT							
WA10	Raspberry Strait	10	Gillnet	-	0	-	6/30/2010
WA20	Malina Bay	10	Gillnet	-	0	-	6/30/2010
WA31 [b]	Paramanof Bay	200	Purse Seine	-	-	-	-
WA32 [b]	Foul Bay	[b]	[b]	[b]	[b]	[b]	[b]
WA40	Bluefox Bay	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
WA50	Offshore W. Afognak	CLOSED	-	-	-	-	-
SOUTH AFOGNAK DISTRICT							
SA10 [c]	Izhut Bay	100	Purse Seine	110	-	5/1/2010	-
SA20 [c]	Kitoi Bay	[c]	[c]	[c]	[c]	[c]	[c]
SA30 [c]	MacDonald Lagoon	[c]	[c]	[c]	[c]	[c]	[c]
SA40	Danger Bay	500	300PS/200GN	388	120	4/20/2010	6/30/2010
SA50	Litnik	CLOSED	-	-	-	-	-
SA60	Duck Bay	CLOSED	-	-	-	-	-
TOTAL ALL AFOGNAK DISTRICTS		870		531	120		
UGANIK DISTRICT							
UG10	Kupreanof	CLOSED	-	-	-	-	-
UG20	Viekoda Bay	25	Gillnet	-	0	-	6/30/2010
UG21	Terror Bay	30	Gillnet	0	0	5/16/2010	5/16/2010
UG30 [d]	Village Islands	1,500	1,200PS/300GN	1,599	3	4/20/2010	5/1/2010
UG31	West Uganik Passage	40	-	84	0	5/15/2010	5/15/2010
UG32 [d]	NE Arm Uganik Bay	[d]	[d]	[d]	[d]	[d]	[d]
UG33 [d]	East Arm Uganik Bay	[d]	[d]	[d]	[d]	[d]	[d]
UG34 [d]	South Arm Uganik Bay	[d]	[d]	[d]	[d]	[d]	[d]
UG40	Offshore Uganik	CLOSED	-	-	-	-	-
DISTRICT TOTAL		1,595		1,684	3		
UYAK DISTRICT							
UY10	Offshore Uyak	CLOSED	-	-	-	-	-
UY20	Harvester Island	CLOSED	-	-	-	-	-
UY30 [e]	Inner Uyak	300	Purse Seine	319	-	4/28/2010	-
UY32	Browns Lagoon	80	Gillnet	-	41	-	6/30/2010
UY31	Larsen Bay	CLOSED	-	-	-	-	-
UY40 [e]	Zachar Bay	[e]	[e]	[e]	[e]	[e]	[e]
UY50	Spiridon Bay	10	Gillnet	-	0	-	6/30/2010
DISTRICT TOTAL		390		319	41		
ALITAK DISTRICT							
AL10	Outer Alitak	CLOSED	-	-	-	-	-
AL20	Inner Alitak	200	Purse Seine	0	0	6/30/2010	6/30/2010
AL21 [f]	Inner Deadman Bay	800	Purse Seine	581	0	6/30/2010	6/30/2010
AL22 [f]	Outer Deadman Bay	[f]	[f]	[f]	[f]	[f]	[f]
AL30	Sulua Bay	100	Gillnet	103	0	6/1/2010	6/1/2010
AL40	Lower Olga	75	Gillnet	3	0	6/30/2010	6/30/2010
AL41	East Upper Olga Bay	125	Purse Seine	24	0	6/30/2010	6/30/2010
AL50	West Upper Olga Bay	125	Purse Seine	86	0	6/1/2010	6/1/2010
AL60	Geese/Twoheaded	EXPLORATORY	Both	19	0	5/6/2010	5/6/2010
DISTRICT TOTAL		1,425		814	0		
STURGEON/HALIBUT DISTRICT							
SH10	Sturgeon/Halibut	CLOSED	CLOSED	CLOSED			

-continued-

Table 2.–Page 2 of 2.

Statistical Area	Management Section	GHL	Initial Gear Type [a]	Harvest		Date Closed	
				Purse Seine	Gillnet	Purse Seine	Gillnet
EASTSIDE DISTRICT							
EA10	Kaiugnak	EXPLORATORY	Both	0	0	-	-
EA20	SW. Sitkalidak	EXPLORATORY	Both	16	0	5/7/2010	5/7/2010
EA21	Three Saints Bay	50	Purse Seine	52	0	5/6/2010	5/6/2010
EA22	Newman Bay	EXPLORATORY	Both	11	0	5/5/2010	5/5/2010
EA23	W. Sitkalidak Strait	300	Purse Seine	346	-	5/5/2010	5/5/2010
EA24	Barling Bay	150	Gillnet	165	0	5/6/2010	5/6/2010
EA30	E. Sitkalidak Strait	300	Purse Seine	284	-	4/21/2010	4/21/2010
EA31	Tanginak Anchorage	EXPLORATORY	Both	28	0	4/29/2010	4/29/2010
EA40	Outer Sitkalidak	CLOSED	-	-	-	-	-
EA41	Boulder Bay	CLOSED	-	-	-	-	-
EA42	Shearwater Bay	50	Gillnet	39	0	5/7/2010	5/7/2010
EA43	Outer Kiliuda Bay	100	Purse Seine	127	-	4/27/2010	-
EA44	Inner Kiliuda Bay	50	Gillnet	39	0	5/5/2010	5/5/2010
EA50	Outer Ugak Bay	350	Purse Seine	521	-	4/23/2010	-
EA51	Inner Ugak Bay	200	Gillnet	277	0	5/1/2010	5/1/2010
EA52	Pasagshak Bay	CLOSED	-	-	-	-	-
DISTRICT TOTAL		1,550		1,905	0		
NORTHEAST DISTRICT							
NE10	Womens Bay	50	Gillnet	105	0	5/13/2010	5/13/2010
NE20	Kalsin Bay	CLOSED	-	-	-	-	-
NE30	Middle Bay	CLOSED	-	-	-	-	-
NE40	Inshore Chiniak	CLOSED	-	-	-	-	-
NE50	Offshore Chiniak	CLOSED	-	-	-	-	-
DISTRICT TOTAL		50		105	0		
INNER MARMOT DISTRICT							
IM10	Monashka Bay	CLOSED	-	-	-	-	-
IM20	Anton Larsen Bay	15	Gillnet	-	0	-	6/30/2010
IM30	Sharatin Bay	30	Gillnet	-	0	-	6/30/2010
IM40	Kizhuyak Bay	150	Purse Seine	180	-	4/21/2010	-
IM50	Spruce Island	CLOSED	-	-	-	-	-
DISTRICT TOTAL		195		180	0		
NORTH MAINLAND DISTRICT							
NM10	Hallo Bay	CLOSED	-	-	-	-	-
NM20	Inner Kukak	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
NM30	Outer Kukak	CLOSED	-	-	-	-	-
NM40	Missak Bay	CLOSED	-	-	-	-	-
MID MAINLAND DISTRICT							
MM10	Inner Katmai	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
MM20	Outer Katmai	CLOSED	-	-	-	-	-
MM30	Alinchak	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
MM40	Puale Bay	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
MM50	Portage Bay	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
MM60	Outer Portage	CLOSED	-	-	-	-	-
SOUTH MAINLAND DISTRICT							
SM10	Wide Bay	EXPLORATORY	Both	0	0	6/30/2010	6/30/2010
SM20	Lower Shelikof	CLOSED	-	-	-	-	-
MAINLAND DISTRICTS TOTAL				0	0		
GRAND TOTAL		6,075		5,538	163		
				% of Harvest	% of Harvest	Total Harvest	
				97%	3%	5,701	

[a] Beginning May 1, ADF&G may open any area to any gear group.
[b] WA31 and WA32 were combined and managed as one section.
[c] SA10, SA20, and SA30 were combined and managed as one section.
[d] UG30, UG32, UG33, and UG 34 were combined and managed as one section.
[e] UY30 and UY40 were combined and managed as one section.
[f] AL21 and AL22 were combined and managed as one section.

Table 3.–Summary of season length, guideline harvest level (GHL), harvest by gear type, percentage of harvest by gear type, number of landings, and estimated exvessel earnings for the herring sac roe fishery in the KMA, from 1979 through 2010.

Year	Season Length (Days)	GHL (Tons)	Total Harvest (Tons)	Harvest by Gear Type		Percent Harvest by Gear Type		Number of Landings by Gear Type		Units of Gear Fished		Average Catch by Gear		Estimated Average Earnings [a]		Price per Ton [a]	Estimated Exvessel Total Value [a]
				Seine (Tons)	Gillnet (Tons)	Seine	Gillnet	Seine	Gillnet	Seine	Gillnet	Seine (Tons)	Gillnet (Tons)	Seine ($)	Gillnet ($)	($)	($)
1979	36	2,400	1,735	1,457	278	84%	16%	-	-	57	125	26	2	$38,342	$3,336	$1,500	$2,602,500
1980	35	2,400	2,383	2,009	374	84%	16%	-	-	92	109	22	3	$15,068	$2,368	$690	$1,644,270
1981	48	2,400	2,065	1,596	469	77%	23%	207	406	79	114	20	4	$14,647	$2,983	$725	$1,497,125
1982	59	2,400	1,771	1,447	324	82%	18%	138	191	45	67	32	5	$17,686	$2,660	$550	$974,050
1983	51	2,400	2,319	1,797	522	77%	23%	164	284	41	64	44	8	$35,063	$6,525	$800	$1,855,200
1984	54	2,400	2,163	1,691	472	78%	22%	138	212	39	69	43	7	$34,687	$5,472	$800	$1,730,400
1985	59	2,000	1,968	1,244	724	63%	37%	118	348	34	81	37	9	$32,929	$8,044	$900	$1,771,200
1986	61	1,690	1,558	1,110	448	71%	29%	132	385	31	71	36	6	$34,016	$5,994	$950	$1,480,100
1987	61	1,640	2,146	1,591	554	74%	26%	122	411	29	62	55	9	$54,862	$8,935	$1,000	$2,146,000
1988	59	2,065	2,171	1,304	867	60%	40%	169	555	33	76	40	11	$51,370	$14,830	$1,300	$2,822,300
1989	76	2,415	2,249	1,513	736	67%	33%	171	627	37	83	41	9	$34,758	$7,537	$850	$1,911,650
1990	75	2,375	2,347	1,644	703	70%	30%	156	544	27	63	61	11	$51,756	$9,485	$850	$1,994,950
1991	83	2,510	2,432	1,697	735	70%	30%	169	587	32	64	53	11	$45,077	$9,762	$850	$2,067,200
1992	77	2,720	4,283	3,260	1,023	76%	24%	185	706	40	74	82	14	$40,750	$6,912	$500	$2,141,500
1993	77	3,525	4,929	4,203	726	85%	15%	237	294	41	86	103	8	$56,382	$4,643	$550	$2,710,950
1994	71	4,550	5,893	4,976	917	84%	16%	285	485	66	57	75	16	$60,315	$12,870	$800	$4,714,400
1995	73	4,480	4,604	3,837	768	83%	17%	280	642	73	71	53	11	$66,858	$13,759	$1,272	$5,856,288
1996	69	4,180	3,386	2,322	1,064	69%	31%	202	890	57	74	41	14	$81,474	$28,757	$2,000	$6,772,000
1997	49	3,435	3,235	2,629	606	81%	19%	183	418	64	59	41	10	$20,539	$5,136	$500	$1,617,500
1998	50	2,030	2,057	1,954	103	95%	5%	110	26	35	7	56	15	$27,914	$7,357	$500	$1,028,500
1999	38	1,495	1,651	1,589	62	96%	4%	94	16	31	5	51	12	$33,984	$8,221	$663	$1,094,613
2000 [b]	37	1,735	1,370	1,290	80	94%	6%	57	23	31	10	42	8	$29,129	$5,600	$700	$959,000
2001	47	1,540	1,694	1,412	282	83%	17%	67	37	33	9	43	31	$21,394	$15,667	$500	$847,000
2002	46	1,860	1,677	1,274	403	76%	24%	37	50	30	14	42	29	$21,233	$14,393	$500	$838,500
2003	42	2,600	1,992	1,738	254	87%	13%	59	45	31	11	56	23	$28,032	$11,545	$500	$996,000
2004	42	2,850	3,167	2,894	273	91%	9%	95	36	27	11	107	25	$53,593	$12,409	$500	$1,583,500
2005	31	3,475	3,463	2,932	531	85%	15%	134	61	32	12	92	44	$45,813	$22,125	$500	$1,731,500
2006	34	3,705	2,643	2,617	26	99%	1%	86	[c]	21	[c]	125	[c]	$34,270	[c]	$275	$726,825
2007	28	4,000	2,546	2,510	36	99%	1%	105	8	21	3	120	12	$47,810	$4,800	$400	$1,018,400
2008	38	4,290	3,099	3,086	13	>99%	<1%	108	[c]	22	[c]	140	[c]	$73,643	[c]	$525	$1,626,975
2009	54	4,765	4,759	4,549	210	96%	4%	218	19	31	6	147	35	$77,040	$18,375	$525	$2,498,475
2010	46	6,075	5,701	5,538	163	97%	3%	277	14	36	7	154	23	$61,533	$9,314	$400	$2,280,400
Average 1979 to 2010	53	2,888	2,796	2,335	461	82%	18%	150	277	41	49	65	14	$41,936	$9,382	$746	$2,048,102
10 Year 2001 to 2010	41	3,516	3,074	2,855	219	91%	9%	119	28	28	8	103	25	$46,436	$11,903	$463	$1,414,758
5 Year 2006 to 2010	40	4,567	3,750	3,660	90	98%	2%	159	9	26	4	137	19	$58,859	$8,578	$425	$1,630,215

[a] Exvessel values are based on dock delivered herring and inseason data.

[b] Beginning in 2000, an allocative harvest strategy was in effect.

[c] Confidential.

Table 4.–Age composition of herring samples from the commercial sac roe fishery, by section in the KMA, 2010.

		Percent at Age														
Section	n	Age-2	Age-3	Age-4	Age-5	Age-6	Age-7	Age-8	Age-9	Age-10	Age-11	Age-12	Age-13	Age-14	Age-15	Harvest (tons)
Barling Bay	339	0.0	3.2	0.6	73.7	8.3	1.2	1.8	10.0	1.2	0.0	0.0	0.0	0.0	0.0	165
Danger Bay	594	0.0	1.0	2.4	66.7	20.5	6.2	1.0	1.5	0.5	0.2	0.0	0.0	0.0	0.0	508
East Sitkalidak	696	0.0	0.4	0.4	69.4	12.5	1.7	3.3	11.1	1.0	0.1	0.0	0.0	0.0	0.0	284
Geese/Twoheaded	72	0.0	0.0	0.0	68.1	20.8	2.8	1.4	4.2	0.0	2.8	0.0	0.0	0.0	0.0	19
Inner/Outer Deadman	708	0.1	16.2	2.1	51.0	14.0	4.2	5.4	6.4	0.4	0.1	0.0	0.0	0.0	0.0	581
Inner Kiliuda	393	0.0	12.5	1.0	63.1	5.1	1.8	4.6	11.5	0.5	0.0	0.0	0.0	0.0	0.0	39
Inner Kukak	470	1.3	67.9	13.2	9.8	6.2	1.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0
Inner Ugak	439	0.0	2.3	0.9	83.4	3.4	1.4	3.2	2.7	1.8	0.2	0.5	0.0	0.2	0.0	277
Inner Uyak	464	0.0	5.4	2.8	68.5	16.2	5.6	0.6	0.2	0.2	0.2	0.0	0.2	0.0	0.0	319
Kitoi/Izhut/MacDonalds	423	0.0	6.9	4.5	59.8	16.3	5.0	4.0	3.1	0.0	0.2	0.0	0.2	0.0	0.0	110
Kizhuyak	139	0.0	2.9	5.8	72.7	5.8	2.9	4.3	4.3	0.7	0.7	0.0	0.0	0.0	0.0	180
Newman Bay	63	0.0	0.0	0.0	47.6	9.5	3.2	4.8	33.3	1.6	0.0	0.0	0.0	0.0	0.0	11
Outer Kiliuda	169	0.0	7.7	2.4	62.7	5.9	1.8	3.6	16.0	0.0	0.0	0.0	0.0	0.0	0.0	127
Outer Ugak	349	0.0	4.0	0.6	90.5	3.2	0.3	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	521
Shearwater	480	0.0	1.3	0.6	81.0	4.4	0.8	1.5	9.6	0.4	0.0	0.2	0.0	0.2	0.0	39
Southwest Sitkalidak	173	0.0	0.6	1.2	62.4	5.8	1.7	5.2	22.0	0.0	0.0	0.6	0.0	0.0	0.6	16
Tanginak Anchorage	162	0.0	0.6	0.0	69.1	9.9	3.7	5.6	11.1	0.0	0.0	0.0	0.0	0.0	0.0	28
Village Islands/Uganik Bays	1,312	0.0	4.3	5.3	50.6	22.3	7.9	3.0	1.8	3.0	1.0	0.8	0.0	0.1	0.0	1,602
West Sitkalidak	546	0.0	1.1	0.4	70.9	9.7	0.9	4.2	11.5	0.7	0.4	0.2	0.0	0.0	0.0	346
West Uganik Passage	69	0.0	0.0	1.4	46.4	29.0	11.6	4.3	5.8	1.4	0.0	0.0	0.0	0.0	0.0	84
Womens Bay	398	0.0	3.8	0.5	59.0	5.5	11.1	7.0	12.6	0.3	0.0	0.3	0.0	0.0	0.0	105
All Samples Combined [a]	8,458	0.0	4.8	2.7	63.6	14.6	4.7	2.9	4.5	1.3	0.4	0.3	0.0	0.0	0.0	5,361

[a] For 'All samples combined' the percent of the harvest by section is weighted to the age class data to estimate overall age composition of the harvest.

Table 5.–Average weight of herring samples from the commercial sac roe fishery, by age and section in the KMA, 2010.

		Weight at Age (g)													
Section	n	Age-2	Age-3	Age-4	Age-5	Age-6	Age-7	Age-8	Age-9	Age-10	Age-11	Age-12	Age-13	Age-14	Age-15
Barling Bay	339	-	97	136	176	211	231	264	285	286	-	-	-	-	-
Danger Bay	594	-	82	131	172	198	235	275	277	294	313	-	-	-	-
East Sitkalidak	696	-	76	138	178	217	256	273	287	276	289	-	-	-	-
Geese/Twoheaded	72	-	-	-	205	240	257	251	318	-	346	-	-	-	-
Inner/Outer Deadman	708	37	98	151	198	233	261	294	313	323	374	-	-	-	-
Inner Kiliuda	393	-	70	112	170	201	255	274	278	278	-	-	-	-	-
Inner Kukak	470	25	53	95	112	159	151	-	175	-	-	-	-	-	-
Inner Ugak	439	-	75	131	158	176	216	248	266	275	279	308	-	313	-
Inner Uyak	464	-	82	126	159	181	213	232	308	306	304	-	309	-	-
Kitoi/Izhut/MacDonalds	423	-	80	121	167	186	227	258	272	-	242	-	340	-	-
Kizhuyak	139	-	88	135	157	194	220	243	294	313	285	-	-	-	-
Newman Bay	63	-	-	-	194	209	233	264	294	260	-	-	-	-	-
Outer Kiliuda	169	-	82	154	170	234	242	278	298	-	-	-	-	-	-
Outer Ugak	349	-	77	127	160	179	178	224	260	260	-	-	-	-	-
Shearwater	480	-	88	142	176	192	236	271	288	308	-	342	-	375	-
Southwest Sitkalidak	173	-	86	200	210	232	288	290	294	-	-	320	-	-	400
Tanginak Anchorage	162	-	92	-	186	220	237	280	272	-	-	-	-	-	-
Village Islands/Uganik Bays	1,312	-	83	120	155	188	219	255	270	266	276	291	-	326	-
West Sitkalidak	546	-	102	130	184	210	252	263	286	263	356	298	-	-	-
West Uganik Passage	69	-	-	141	174	207	230	236	259	285	-	-	-	-	-
Womens Bay	398	-	80	124	167	211	229	242	256	302	-	328	-	-	-

Table 6.–Herring food and bait commercial fishery GHLs and harvest (tons) by district, KMA, 2010.

Management District	GHL	Harvest
F/B 3 - South Afognak	60	64
F/B 4 - Uganik	159	127
F/B 5 - Uyak	39	0
F/B 7 - Alitak	142	0
F/B 8 - Eastside	155	0
Total	555	191

Table 7.–Herring food and bait commercial fishery GHLs and harvest, KMA, 2001 through 2010.

Year	GHL (tons)	Harvest (tons)
2001	107	114
2002	134	135
2003	197	199
2004	225	190
2005	302	168
2006	342	169
2007	370	154
2008	351	202
2009	420	263
2010	555	191
Average	300	179

Table 8.–Subsistence herring harvest summary for the KMA, 1991 through 2010.

Year	Permits Issued	Permits Returned	Estimated Harvest in Pounds by District								
			Afognak	Northeast	Inner Marmot	Uganik	Uyak	Eastside	Alitak	Other	Total
1991	50	9	2,110	1,745	1,745	1,000	0	0	0	0	6,600
1992	45	10	120	250	250	1,000	0	0	320	0	1,940
1993	50	16	90	3,000	3,910	550	50	0	0	0	7,600
1994	47	14	90	740	1,350	2,000	200	0	0	0	4,380
1995	20	6	75	0	500	0	340	0	175	0	1,090
1996	23	10	550	180	140	0	590	0	0	0	1,460
1997	16	7	0	200	350	50	1,325	0	0	0	1,925
1998	18	10	1,240	0	0	50	0	0	0	0	1,290
1999	15	9	0	200	350	0	425	0	0	0	975
2000	39	21	575	21,150	0	1,825	0	0	700	0	24,250
2001	48	19	3,000	0	875	0	1,015	10,500	0	0	15,390
2002	[a]	23	1,170	1,150	420	0	200	903	0	0	3,843
2003	[a]	16	0	220	300	0	420	1,210	30	0	2,180
2004	[a]	24	200	580	465	206	1,580	1,142	0	0	4,173
2005	[a]	37	300	850	1,070	160	550	2,300	155	0	5,385
2006	[a]	33	600	1,109	1,175	250	415	1,650	0	0	5,199
2007	[a]	37	200	912	1,430	5	1,470	850	300	0	5,167
2008	[a]	21	100	1,134	1,110	50	1,020	610	0	0	4,024
2009	[a]	36	625	660	520	400	451	980	0	330	3,966
2010	[a]	26	401	527	650	200	250	595	150	0	2,773

[a] Beginning in 2002 herring was added to the Kodiak subsistence salmon and crab permit; no separate permit was required.

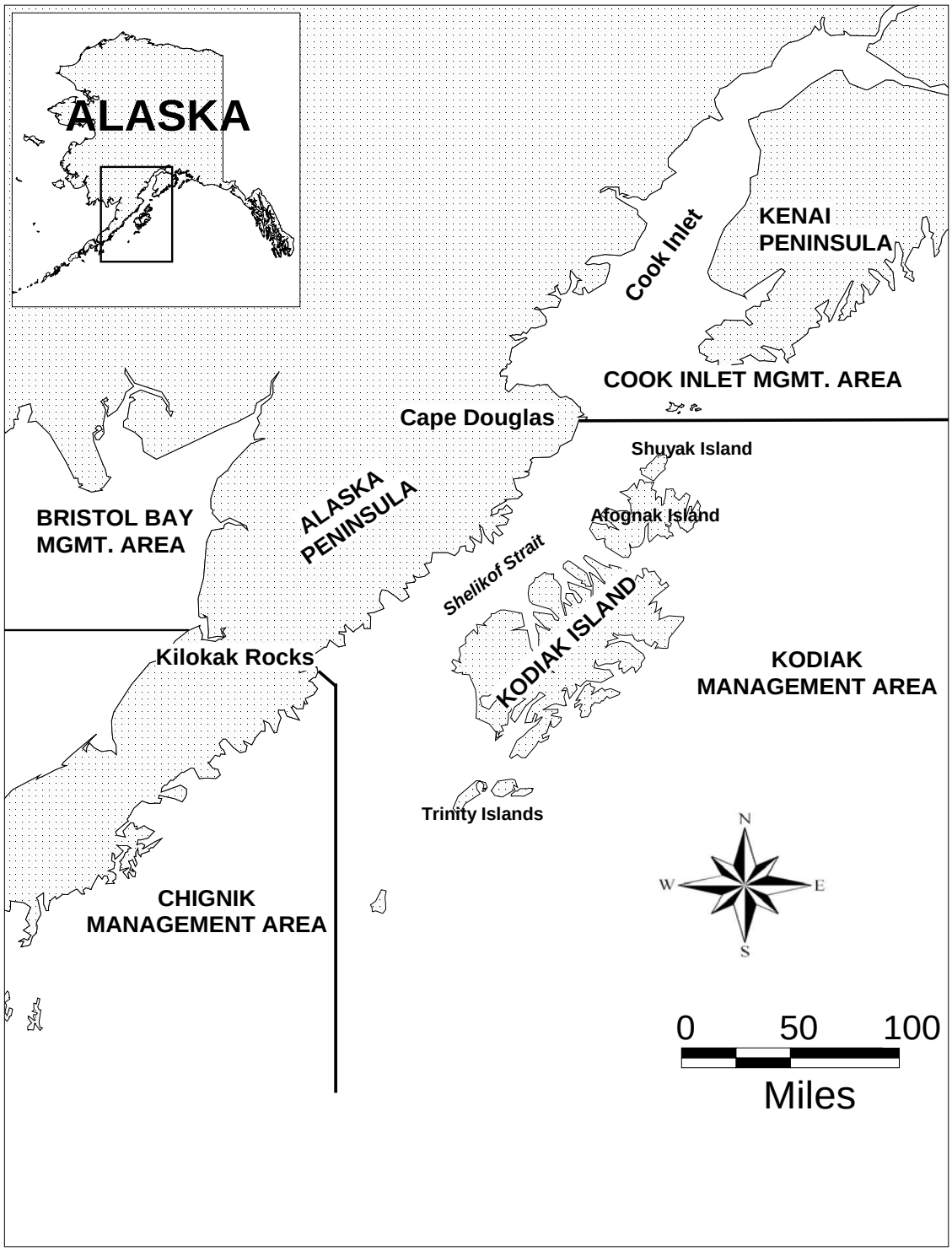


Figure 1.–Map of southwestern Alaska showing the KMA and surrounding management areas.

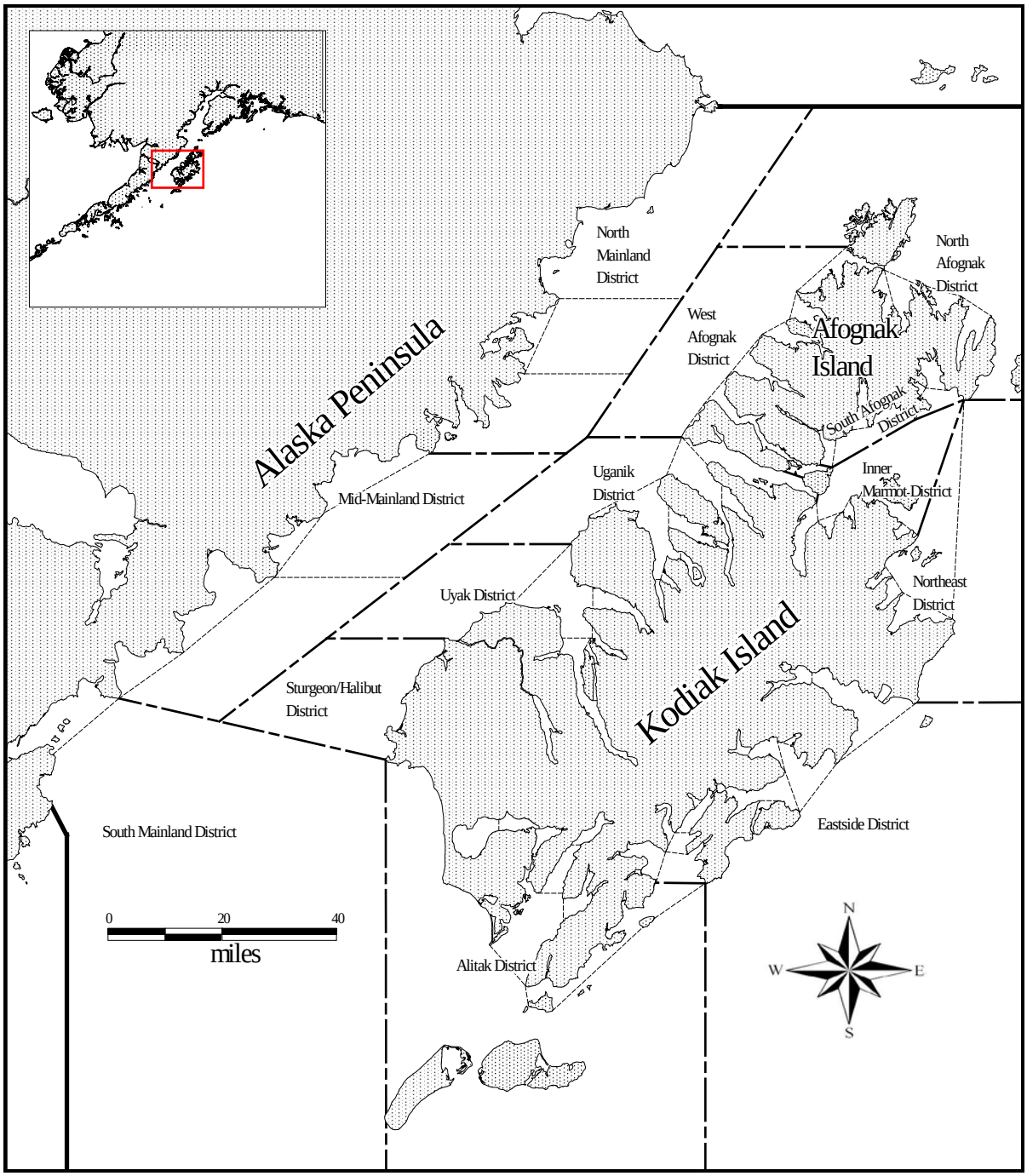


Figure 2.–Map of the KMA illustrating the herring commercial fishery districts.

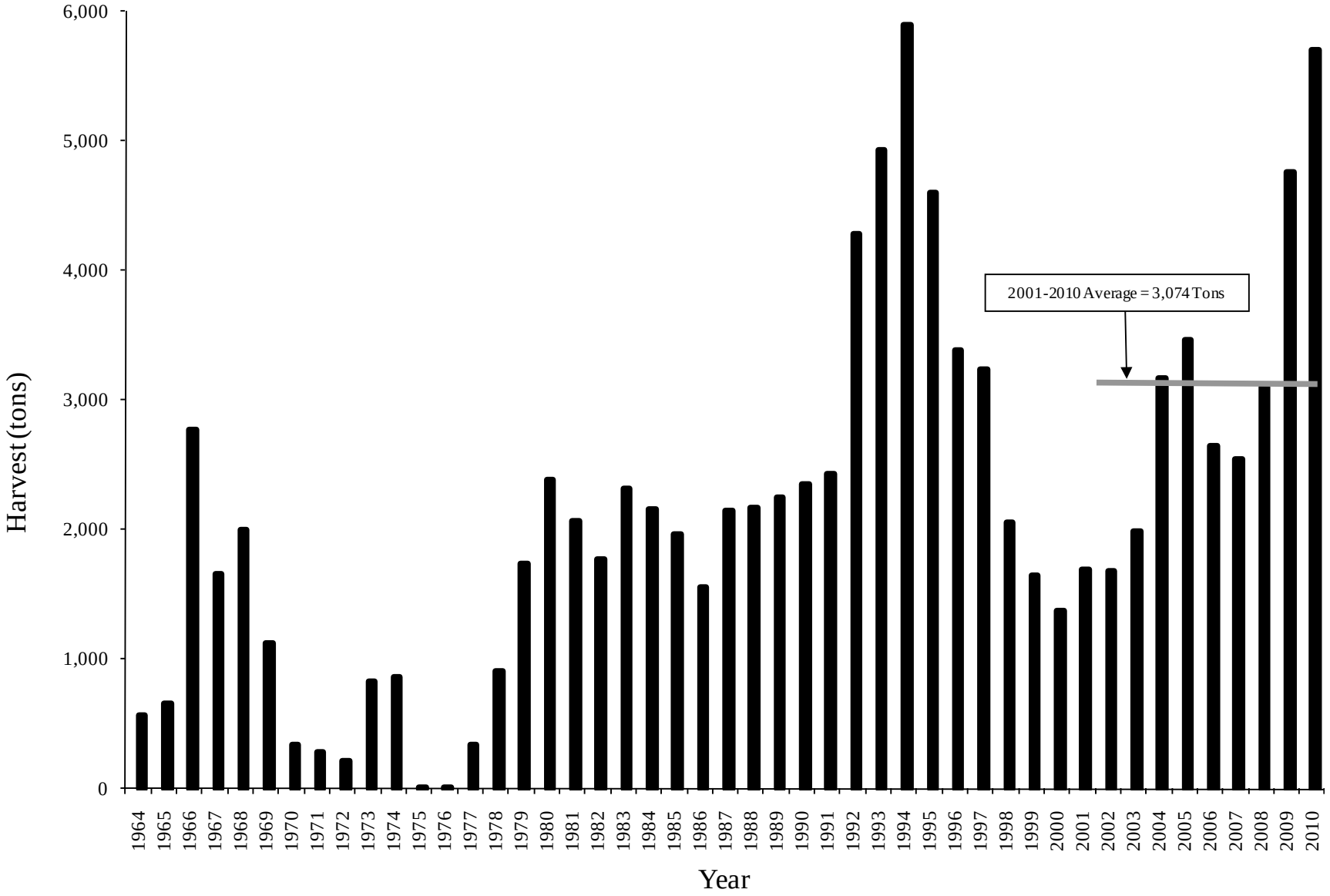


Figure 3.–Herring sac roe commercial fishery harvest in the KMA, 1964 through 2010.

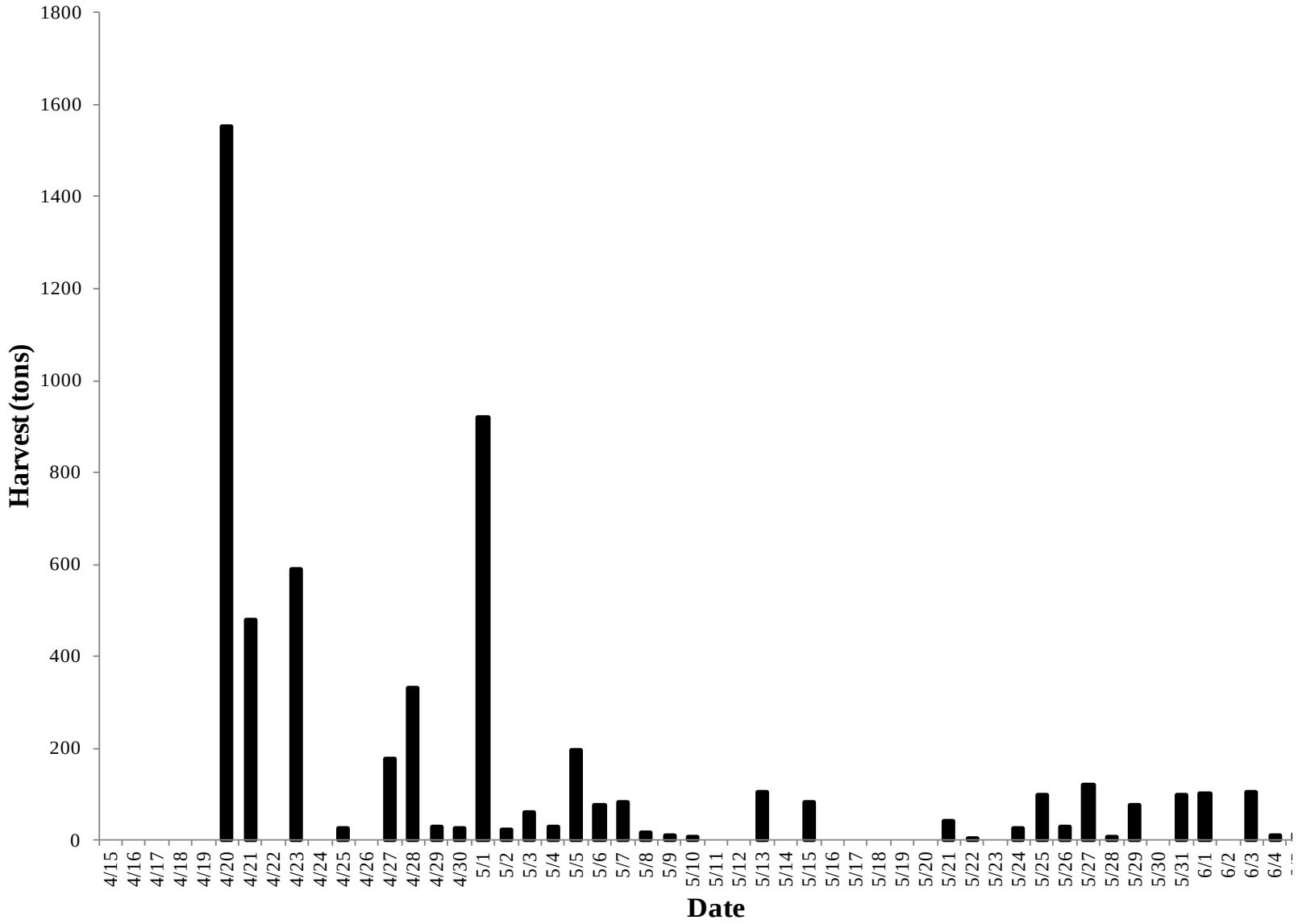


Figure 4.–Herring sac roe fishery harvest by day in the KMA, 2010.

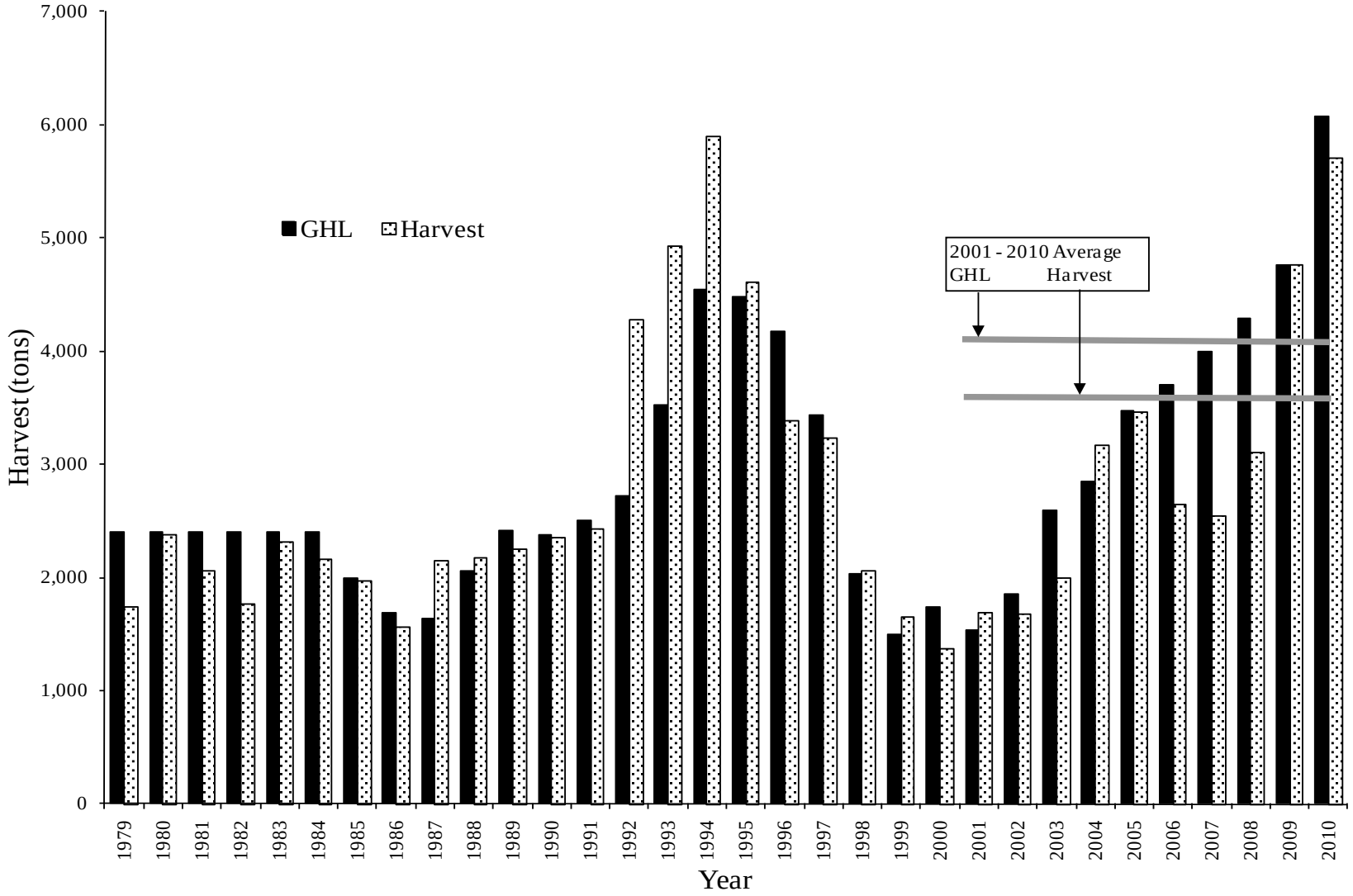
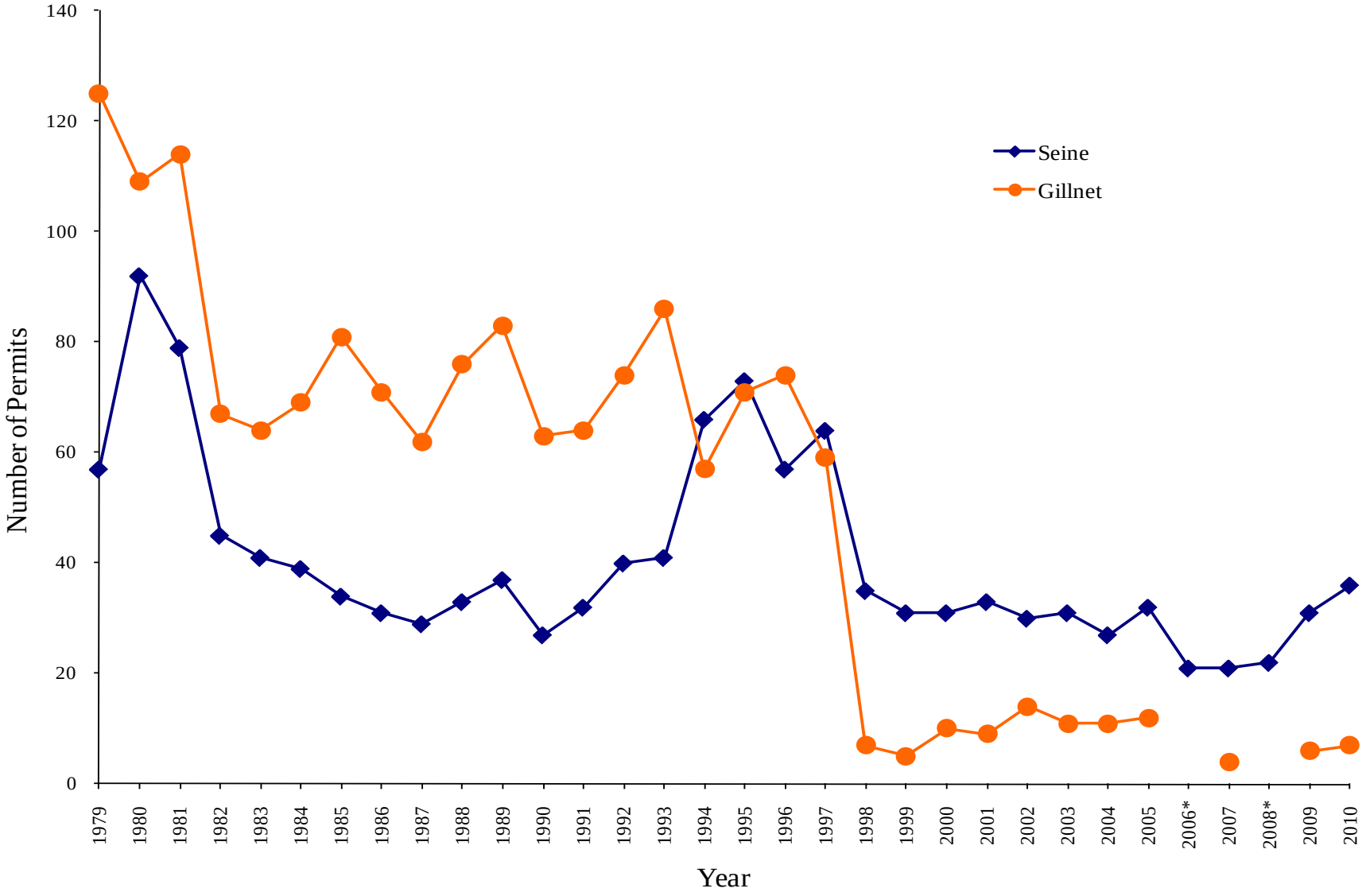


Figure 5.–Comparison of guideline harvest levels (GHLs) to the herring sac roe commercial harvest, KMA, 1979 through 2010.



*2006 and 2008 gillnet data is confidential

Figure 6.–Herring sac roe commercial fishery participation, by gear type in the KMA, 1979 through 2010.

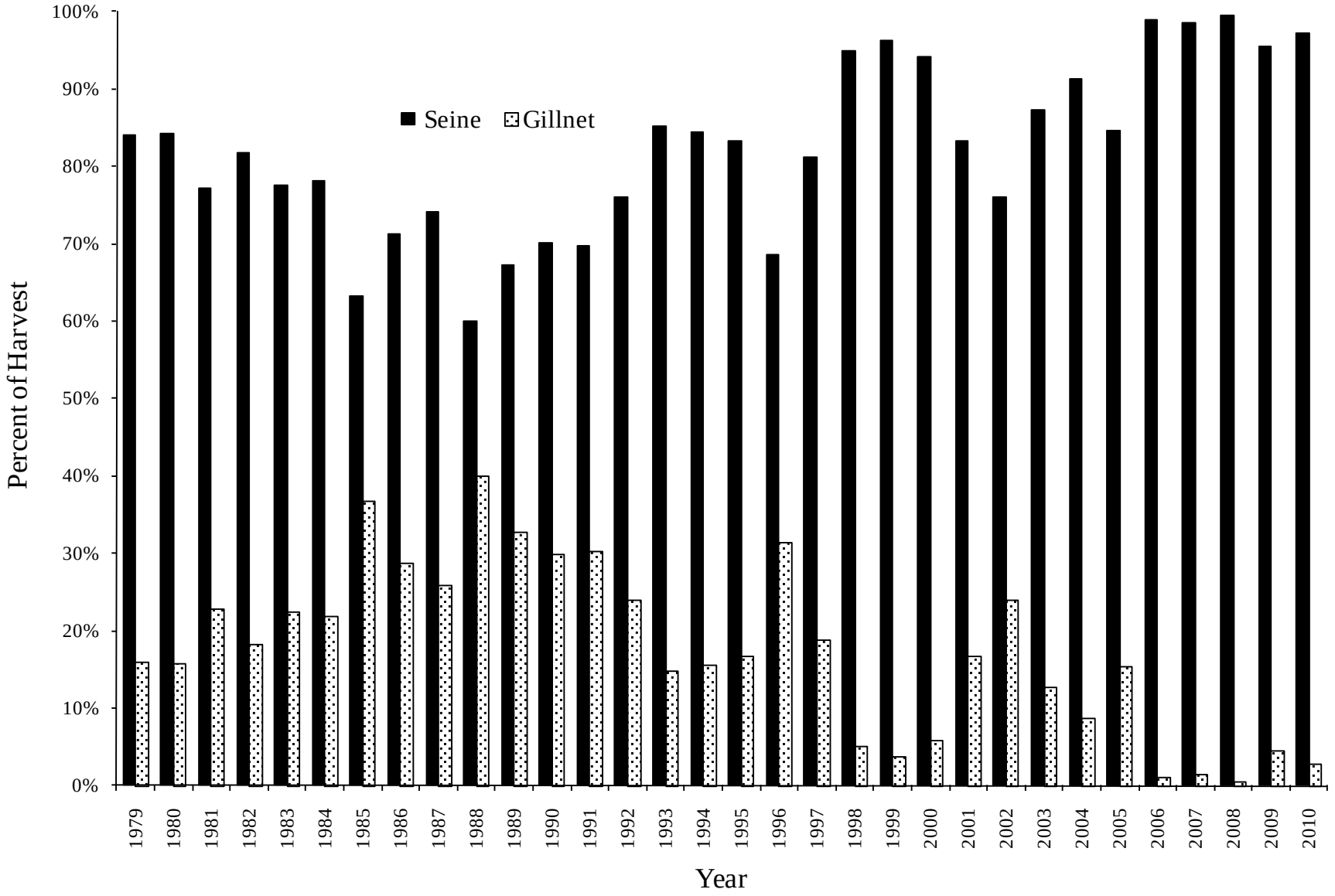


Figure 7.–Percent of the total harvest taken by gear type in herring sac roe commercial fishery, KMA, 1979 through 2010.

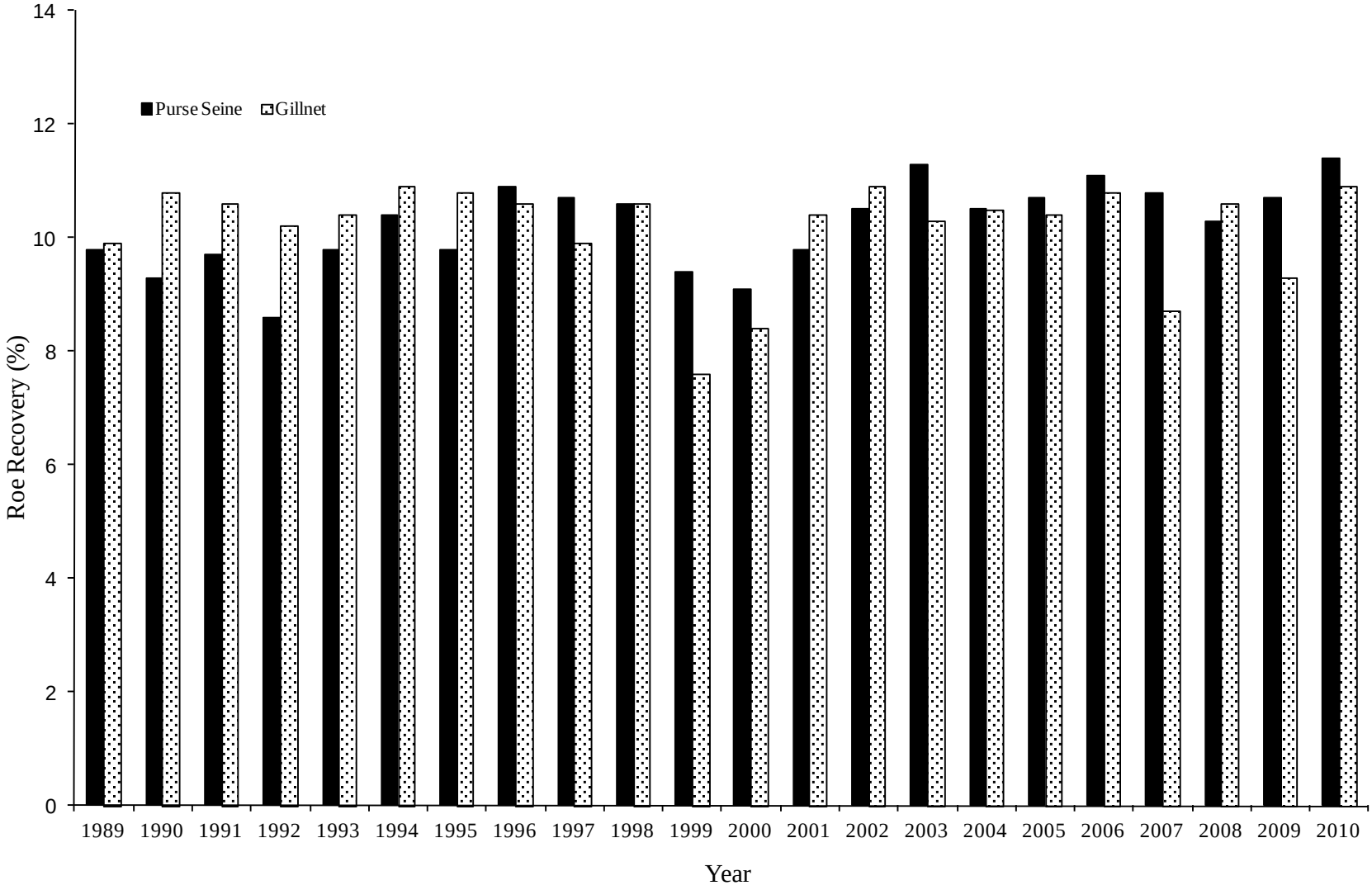
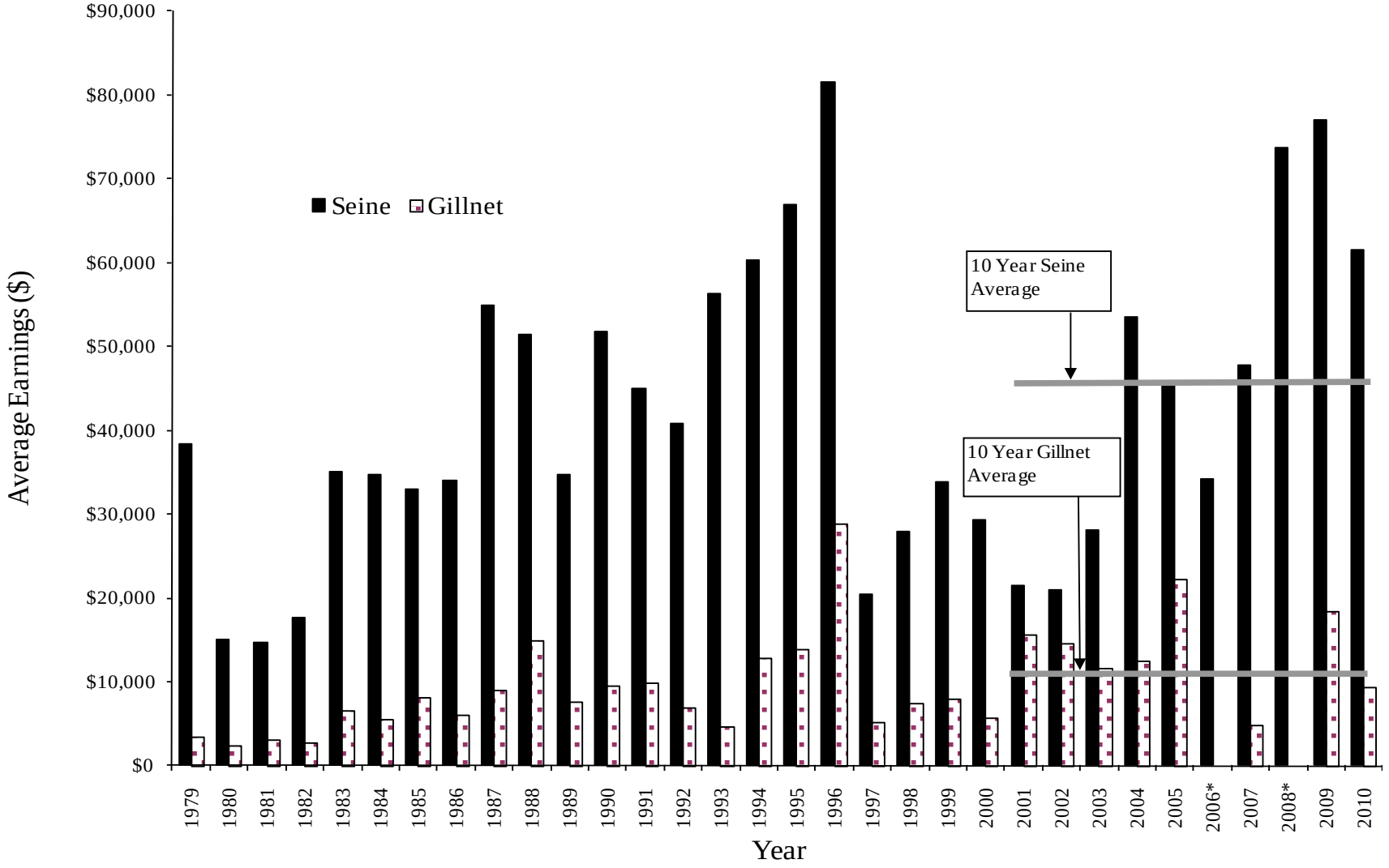


Figure 8.–Herring sac roe fishery, roe recovery in the KMA, 1989 through 2010.



* 2006 and 2008 gillnet data is confidential

Figure 9.–Average earnings by gear type for herring sac roe commercial fisheries, KMA, 1979 through 2010.

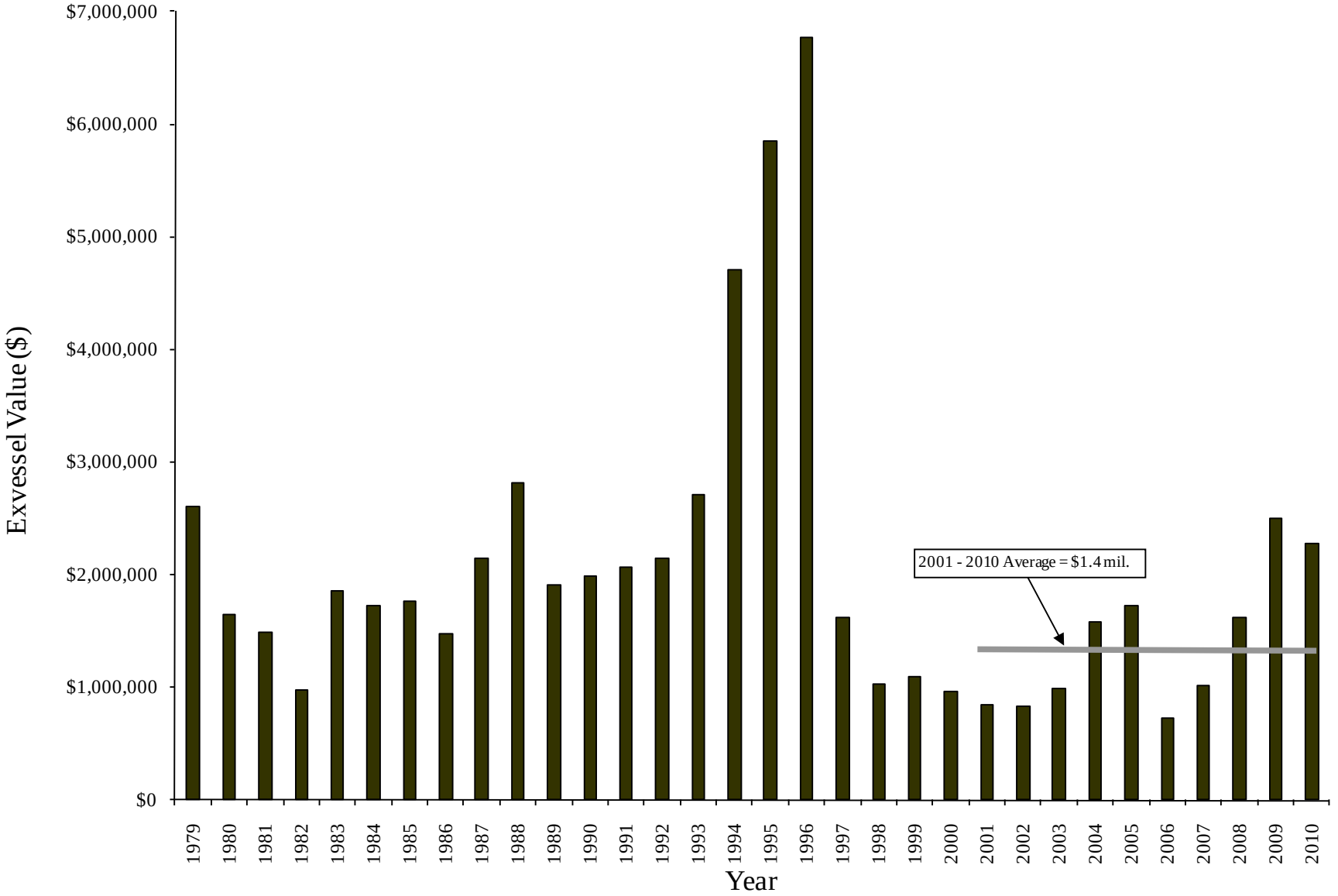


Figure 10.–Total exvessel value for herring sac roe commercial fisheries, Kodiak Management Area, 1979 to 2010.

APPENDIX A. SUMMARY OF EMERGENCY ORDERS ISSUED FOR THE HERRING COMMERCIAL FISHERIES IN THE KODIAK MANAGEMENT AREA, 2010

Appendix A1.–Summary of emergency orders issued for the herring commercial fisheries in the Kodiak Management Area, 2010.

Emergency Order #	Issued	Effective:	Action Taken:
1	11:00 AM April 9	NOON April 15	Open Sac Roe Fishery: initial opening times and fishing periods by gear and section for sac roe herring fishery announced.
2	10:00 AM April 20	10:05 AM April 20	Fishing Period: Commercial herring fishing opened in the Village Islands/Uganik Bay Sections (UG30, 32-34) for purse seine gear from 10:05 AM to 11:05 AM April 20 in that portion south of 57°46.90' N lat.
3	10:30 AM April 20	10:45 AM April 20	Fishing Period: Commercial herring fishing opened in the Danger Bay Section (SA40) for purse seine gear from 10:45 AM to 11:45 AM April 20 in that portion south of 58°10.75' N lat.
4	11:00 AM April 20	11:05 AM April 20	Extension: commercial herring fishing was extended in the Village Islands/Uganik Bay Sections (UG30, 32-34) for purse seine gear from 11:05 AM to 12:05 PM April 20 in that portion south of 57°46.90' N lat.
5	11:30 AM April 20	11:45 AM April 20	Extension: commercial herring fishing was extended in the Danger Bay Section (SA40) for purse seine gear from 11:45 AM to 12:45 PM April 20 in that portion south of 58°10.75' N lat.
6	1:30 PM April 20	1:45 PM April 20	Fishing Period: Commercial herring fishing opened in the Danger Bay Section (SA40) for purse seine gear from 1:45 PM to 2:45 PM April 20 in that portion north of 58°10.00' N lat and south of 58°11.00' N lat.
7	2:17 PM April 20	2:20 PM April 20	Closure: The Danger Bay Section (SA40) for purse seine gear at 2:20 PM April 20.

-continued-

Emergency Order #	Issued:	Effective:	Action Taken:
8	2:30 PM April 20	2:35 PM April 20	Fishing Period: Commercial herring fishing opened in the Village Islands/Uganik Bay Sections (UG30, 32-34) for purse seine gear from 2:35 PM to 3:35 PM April 20 in that portion south of 57°46.90' N lat.
9	3:16 PM April 20	3:16 PM April 20	Closure: The Village Islands/Uganik Bay sections (UG30, 32-34) for purse seine gear at 3:16 PM April 20.
10	3:30 PM April 20	4:00 PM April 20	Fishing Period: Commercial herring fishing opened in the Danger Bay Section (SA40) for gillnet gear at 4:00 PM April 20 until further notice.
11	4:00 PM April 20	9:00 PM April 20	Fishing Period: Commercial herring fishing opened in the Village Islands/Uganik Bay sections (UG30, 32-34) for gillnet gear from 9:00 PM April 20 to 9:00 AM April 222.
12	5:13 PM April 21	5:13 PM April 21	Closure: The East Sitkalidak Section (EA30) at 5:13 PM April 21.
13	7:00 PM April 21	9:00 AM April 22	Extension: commercial herring fishing was extended in the Village Islands/Uganik Bay sections (UG30, 32-34) for gillnet gear at 9:00 AM April 22 until further notice.
14	7:00 PM April 21	NOON April 23	Fishing Period: commercial herring fishing opened for purse seine gear in the Outer Ugak Bay Section (EA50) at NOON April 23.
15	9:00 PM April 21	9:00 PM April 21	Closure: The Kizhuyak Bay Section (IM40) at 9:00 PM April 21.
16	5:33 PM April 23	5:33 PM April 23	Closure: The Outer Ugak Bay Section (EA50) at 5:33 PM April 23.

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Emergency Order #	Issued:	Effective:	Action Taken:
17	3:00 PM April 23	3:20 PM April 23	Fishing Period: Commercial herring fishing opened in the Inner Uyak Bay Section (UY30) from 3:20 PM to 9:00 PM April 30 in that portion south of 57°25.73' N lat.
18	6:40 PM April 23	6:40 PM April 23	Closure: The Inner Uyak Bay Section (UY30) at 6:40 PM April 23.
19	8:50 PM April 27	8:50 PM April 27	Closure: The Outer Kiliuda Bay Section (EA43) at 8:50 PM April 27.
20	2:30 PM April 28	2:40 PM April 28	Fishing Period: commercial herring fishing opened in the Inner Uyak Bay Section (UY30) from 2:40 PM to 9:00 PM April 28 in that portion south of 57°25.73' N lat.
21	3:40 PM April 28	3:50 PM April 28	Closure: The Inner Uyak Bay Section (UY30) at 3:50 PM April 28.
22	4:30 PM April 28	9:00 AM May 1	Closure: The Village Islands/Uganik Bay sections (UG30, 32-34) at 9:00 AM May 1 for gillnet gear.
23	9:30 AM April 29	NOON May 1	Fishing Period: Establishes the sections that will be opened to both gear types beginning Noon May 1.
24	3:10 PM April 29	3:10 PM April 29	Closure: The Tanginak Anchorage Section (EA31) at 3:10 PM April 29.
25	2:00 PM May 1	2:00 PM May 1	Closure: The Inner Ugak Bay Section (EA51) at 2:00 PM May 1.
26	12:55 PM May 1	1:05 PM May 1	Fishing Period: Commercial herring fishing opened in the Village Islands/Uganik Bay Sections (UG30, 32-34) for purse seine gear from 1:05 PM to 1:35 PM May 1 in that portion south of 57°48.0' N lat and north of 57°47.0' N lat.

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Emergency Order #	Issued:	Effective:	Action Taken:
27	1:25 PM May 1	1:35 PM May 1	Extension: Commercial herring fishing was extended in the Village Islands/Uganik Bay Sections (UG30, 32-34) for purse seine gear from 1:35 PM to 2:35 PM May 1 in that portion south of 57°48.0' N lat and north of 57°47.0' N lat.
28	2:15 PM May 1	2:20 PM May 1	Closure: The Village Islands/Uganik Bay sections (UG30, 32-34) at 2:20 May 1. Fishing Period: The Inner Kiliuda Bay Section to purse seine gear at NOON May 3.
29	9:00 PM May 1	9:00 PM May 1	Closure: The Izhut Bay Section (SA10) at 9:00 PM May 1.
30	11:00 AM May 2	NOON May 2	Fishing Period: The Tonki Bay (NA50) and the West Sitkalidak (EA23) sections to gillnet gear at NOON May 2.
31	5:00 PM May 2	5:00 PM May 2	Fishing Period Delay: The Inner Kiliuda Bay Section (EA44) will remain closed until further notice.
32	3:00 PM May 3	5:00 PM May 3	Fishing Period: The Three Saints Bay Section (EA21) to gillnet gear at 5:00 PM May 3. The Inner Kiliuda Bay Section (EA44) to purse seine gear at NOON Wednesday May 5.
33	1:30 PM May 5	1:40 PM May 5	Closure: The West Sitkalidak Section (EA23) at 1:40 PM May 5.
34	2:45 PM May 5	2:45 PM May 5	Closure: The Newman Bay Section (EA22) at 2:45 PM May 5.
35	4:30 PM May 5	4:30 PM May 5	Closure: The Tonki Bay Section (NA50) at 4:30 PM May 5.

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Emergency Order #	Issued:	Effective:	Action Taken:
36	5:05 PM May 5	5:05 PM May 5	Closure: The Inner Kiliuda Bay Section (EA44) at 5:05 PM May 5.
37	6:00 PM May 5	6:00 PM May 5	Closure: The Geese-Twoheaded Section (AL60) at 6:00 PM May 5.
38	6:00 PM May 5	NOON May 7	Fishing Period: The Shearwater Bay Section (EA42) to purse seine gear at NOON May 7.
39	11:00 AM May 6	11:00 AM May 6	Closure: The Barling Bay Section (EA24) at 11:00 AM May 6.
40	NOON May 6	NOON May 6	Closure: The Three Saints Bay Section (EA21) at NOON May 6.
41	2:10 PM May 7	2:10 PM May 7	Closure: The Shearwater Bay Section (EA42) at 2:10 PM May 7.
42	7:45 AM May 8	9:00 PM May 7	Closure: The Southwest Sitkalidak Section (EA20) at 9:00 PM May 7.
43	8:15 AM May 9	NOON May 11	Fishing Period: The Terror Bay (UG21) and the West Uganik Passage (UG31) sections to purse seine gear at NOON May 11.
44	4:00 PM May 11	NOON May 13	Fishing Period: The Womens Bay Section (NE10) to purse seine gear NOON May 13.
45	12:45 PM May 13	12:45 PM May 13	Closure: The Womens Bay Section (NE10) at 12:45 PM May 13.
46	5:30 PM May 15	5:30 PM May 15	Closure: The West Uganik Passage (UG31) at 5:30 PM May 15.

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Emergency Order #	Issued:	Effective:	Action Taken:
47	12:45 PM May 16	NOON May 16	Closure: The Terror Bay Section (UG21) at NOON May 16.
48	10:00 AM June 1	NOON June 1	Closure: The West Upper Olga Bay Section (AL50) at NOON June 1.
49	8:20 PM June 1	8:20 PM June 1	Closure: The Sulua Bay Section (AL30) at 8:20 PM June 1.
50	4:00 PM September 17	12:01 AM September 19	F/B Fishing Period: Established the initial fishing period for the food and bait fishery in the South Afognak District at 12:01 AM September 19.
51	11:00 AM October 26	NOON October 26	F/B Closure: The South Afognak District (F/B 3) at Noon October 26.

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